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Except as indicated, abstracts are by William H. Stickel, editor.

WILDLIFE--NEW GAME JOURNAL

ZEITSCHRIFT FÜR JAGDWISSENSCHAFT (Journal of Game Science). Published quarterly. Band 1, Heft 1, 1-48 p., illus., 1955. Band 1, Heft 2, 49-112 p., illus. 1955. Editors: Prof. Fritz Nüsslein and Dr. Walter Rieck, Institute für Jagdkunde, Forstlichen Fakultät, Georg-August-Universität Göttingen, Hann.-Münden, Germany. Price DM 7.50 per issue or DM 24 per volume of 4 issues. Order from publisher: Verlag Paul Parey, Spitalerstrasse 12, Hamburg 1, Germany. Communications about possible exchanges of journals should be addressed to Dr. Rieck.

This new wildlife management journal is published in connection with the recently formed Internationaler Ring von Jagdwissenschaftlern, which includes many noted European game biologists. A valuable feature of the journal is the section of abstracts and reviews of current wildlife literature. Dr. Rieck informs us that this section contains references to all essential wildlife works published in Central Europe. The bulk of the journal consists of technical papers on such subjects as wildlife science in Germany, hair coat of snow hare, horn growth and age classes of chamois, differential kill of young and old hares by different types of hunting with drives, how game abundance was studied in jungles of Java, introductions of game into Black Forest, significance of parasites in game, artificial diets for and food needs of roe and red deer, factors in population fluctuations of capercaillie, ear-notching of roe deer for field identification of year classes, breeding dates of German deer, productivity of hare in Poland, occurrence of vultures near Salzburg, reporting system for scabies of chamois, European game literature of the 12th to 15th centuries, factors affecting weight of red deer, game research in Sweden, and a discussion of the subdivisions of game management. All papers are in German, but the main papers have French and English summaries.

WILDLIFE--EDUCATION

HANDBOOK FOR TEACHING CONSERVATION AND RESOURCE USE. Natl. Assn. Biol. Teachers. 450 p., illus. 1955. $4.00 (20% discount to schools) from Dr. R. L. Weaver, P. O. Box 2073, Ann Arbor, Mich. [From Outdoor News Bul. 9(18).]

"Expertly written by 200 teachers from 30 States, the text brings out how these teachers have incorporated conservation and resource-use programs into the schools."

WILDLIFE--TECHNIQUES

Carhart, Arthur H. THE OUTDOORSMAN'S COOKBOOK. Revised edition. Macmillan Co., N. Y. 211 p., 13 figs. 1955. $2.95.

An excellent book in many respects. It is thoroughly up-to-date in telling how to cook with aluminum foil, how to make good use of many dehydrated foods, and in mentioning the undeniable advantages of bottle-gas stoves and lanterns. Yet it also tells how to start and handle campfires, and how to plan supply lists for diets ranging from the "rawhide" rations of Spartan hiking trips to the good eating of base camps. Regardless of how plainly or luxuriously you travel away from civilization, you will find helpful information here--much of it based on experience. Some chapters tell how to dress and care for meat of wild game, and how to use wild fruits and vegetables. Others take up practical recommendations and recipes for meats, soups, stews, vegetables, breads, beverages, desserts, and other dishes. A closing chapter gives favorite wildlife recipes of several distinguished outdoorsmen. The book is useful and sound in more ways than can be mentioned. It is necessary, however, to call attention to 2 dangerous errors: On p. 93 it is stated that you can feel safe from tularemia from a rabbit if the rabbit was lively, and if you have not heard of any rabbit die-off in the district. Neither criterion is at all adequate, according to C. M. Herman, wildlife pathologist. Even worse, on p. 189 we read, "...if you find mushrooms on which the little animals have been feeding, it is a fair sign those fungi are safe eating..." This violates common biological knowledge and according to J. A. Stevenson, USDA mycologist, it is definitely untrue and is some of the worst advice that could be given.

WILDLIFE--TECHNIQUES--Continued

Crockford, Jack A., and Robert W. Cannon. (Ga. Game Comm.) A MODIFICATION OF THE CANNON-PROJECTED NET BANDING TRAP. Ga. Game & Fish Comm., PR Proj. 14-D. 15 unnumbered p., illus., mimeo. June 1955.

In this simplified outfit the cannon consists only of a tube closed at one end and a spacer ring. "There is no firing mechanism such as a breech-block, to contend with... The propellent charge...of black powder is placed in a toy balloon... A blackpowder squib to detonate the powder charge is inserted in the balloon. The wires of the squib are run through a hole bored in the projectile. The neck of the balloon is twisted and pulled snugly into the base of the projectile which completely waterproofs the powder charge and squib. ...the projectile is lowered into the gun until it comes in contact with the spacer ring which serves as a stop for the projectile and prevents damage to the balloon... The squib wires are attached to lead wires that run to a 6-volt hotshot battery." Diagrams, specifications, and information on the net part of the trap are included.

Hagar, Robert K., and William Nagy. (St. U. of N. Y. Coll. Forestry, Syracuse.) A METHOD OF DETERMINING SCALE OF VERTICAL AERIAL PHOTOS. J. Forestry 53(8): 588-589, graph. Aug. 1955.

Hood, Mary V. OUTDOOR HAZARDS REAL AND FANCIED. Macmillan Co., N. Y. xiii + 242 p., illus. 1955. $3.95.

The authoress, an experienced hiker, camper, and lecturer, wrote this book largely to dispel needless fear of the outdoors. In this she failed, but the book is full of reliable (though extreme) information about dangers from bears, eagles, snakes, toads, scorpions, wasps, poisonous plants, lightening, frostbite and dozens of other real or reputed menaces. Any biologist will find much material new to him. The book is interesting and easily read and its touches of subtle humor are most enjoyable. The authoress is at her best when discussing earthy problems of hiking and camping in the west, for here she is on familiar ground and can give practical tips. Actual errors in the book are minor. We have 2 major complaints: 1. Danger after danger, many of them shown at their worst, combine to make a horror story guaranteed to make mother keep Johnny home from camp. Precautions recommended are sometimes so extreme as to be laughable, at least for the nation as a whole. 2. Mrs. Hood has chosen to ignore the effective repellents, antihistamines, sun-tan oils, and anti-itch creams that have appeared in the last decade. She may have done so on conservative advice, but by sticking to flowers of sulfur, bicarbonate of soda paste, and calamine lotion she has made her sections on treatment read as if written a generation ago.

Lachelt, Theodore C. (U. Alaska.) SUGGESTED USES OF RADIOISOTOPES IN WILDLIFE FIELD INVESTIGATIONS. Sci. in Alaska 1952. Proc. 3d Alaskan Sci. Conf., Alaska Div. A.A.A.S., p. 213-214. Published at College, Alaska, Sept. 1954.

Radioactivity as a marker has the advantage of being passed from mother to young, or from prey to predator to scat, if the proper isotope is chosen for a given job. Qualifications for a good isotope for mother-to-young work are listed; iron-55 may be satisfactory. For prey-to-scat (or plant-to-pellet) work one might want an isotope that was not assimilated by the eater. The author stresses the importance of selecting an isotope whose length of life is suitably related to length of study. He concludes that "The optimum half-life is .693 times the length of the study. Attention to this detail may make the difference between success or failure in borderline cases." The author points out that his suggestions are only suggestions. "To transform them into practical field methods will require considerable time and research as well as a nominal outlay of money."

Nielsen, E. T., and J. S. Haeger. (Fla. St. Bd. Health, Vero Beach.) A SIMPLE METHOD OF ESTIMATING LOW LIGHT INTENSITIES. Ecol. 36(3): 525-526. July 1955.

Suitable for field work when there is very little light. Based on amounts of light needed for discrimination between threads of various degrees of color contrast.

WILDLIFE--BIOMETRICS

Arbous, A. G., and H. S. Sichel. NEW TECHNIQUES FOR THE ANALYSIS OF ABSENTEEISM DATA. Biometrika 41(1/2): 77-90, figs. 1954. [Copy of review by C. H. Blake, Bird-Banding 26(1).]

"The methods of this paper may be applied to the question of whether a bird tends to avoid a trap after being once or more often trapped. By appropriate shifting of traps it would also be possible to say whether the avoidance is primarily a matter of trap type or of location. It is further possible to examine whether some individuals are more likely than others to avoid traps, that is are absence-prone. Two models are set up. One gives the probability of finding an individual in the group having x absences in the same known exposure period. Throughout, an absence is a 'period (of any length) of unbroken non-attendance.' The second model employs two equilong, non-overlapping periods of exposure and is used to study absence-proneness. The authors recognize the need of keeping conditions of exposure constant and that individuals learn and adapt themselves in the course of time. The way is now open for some elegant and realistic work on the effects of trapping on the action of birds."

Clark, Philip J., and Francis C. Evans. (U. Mich.) ON SOME ASPECTS OF SPATIAL PATTERN IN BIOLOGICAL POPULATIONS. Science 121(3142): 397-398. Mar. 18, 1955.

Gulland, J. A. (Fisheries Lab., Lowestoft, G. B.) ON THE ESTIMATION OF POPULATION PARAMETERS FROM MARKED MEMBERS. Biometrika 42(1/2): 269-270. June 1955.

Concerned with the maximum likelihood estimate of F and M where F and M represent constant exponential coefficients pertaining to 2 distinct types of mortality in commercial fish populations.--V. Schultz.

MacArthur, Robert. (DW Ranch, Hereford, Ariz.) FLUCTUATIONS OF ANIMAL POPULATIONS, AND A MEASURE OF COMMUNITY STABILITY. Ecol. 36(3): 533-536, graphs. July 1955.

Mathematical study.

Slobodkin, L. Basil. (U. Mich.) CONDITIONS FOR POPULATION EQUILIBRIUM. Ecol. 36(3): 530-533, graphs. July 1955.

Mathematical study.

Thompson, H. R. (Applied Math. Lab., DSIR, Wellington, N. Z.) SPATIAL POINT PROCESSES, WITH APPLICATIONS TO ECOLOGY. Biometrika 42(1/2): 102-115. June 1955.

Concerned with "the application of point process techniques to deriving the probability relations between the numbers of plants in the quadrats of a grid, required particularly in the analysis of variance and its sampling theory."--V. Schultz.

Ullyett, G. C. BIOMATHEMATICS AND INSECT POPULATION PROBLEMS--A CRITICAL REVIEW. Ent. Soc. So. Africa, Mem. no. 2. 89 p. Aug. 1953. 15s. from P. O. Box 103, Pretoria, So. Africa.

A critical discussion of the application of biomathematics to insect population problems. It is also applicable to problems in wildlife research. Table of contents includes: Equations of Growth, Biology of Population Growth, Biological Facts and Law of Growth, Competition for Space and Food, Theory of Random Action, Destructive Environmental Factors, Inadequacy of Mathematics.--V. Schultz.

WILDLIFE--NATURAL AREAS AND REFUGES

Dahl, John M. (Tamarac Refuge, Rochert, Minn.) TAMARAC NATIONAL WILDLIFE REFUGE. Cons. Volunteer 18(106): 18-23, illus. July-Aug. 1955.

Describes and maps this 29,000-acre waterfowl refuge and tells a little about its history, management, wildlife, and recreational uses.

WILDLIFE--NATURAL AREAS AND REFUGES--Continued

Gilligan, James P. (Okla. A & M Coll.) WILDERNESS IN A DEMOCRACY. Living Wilderness 20(52): 25-29, illus. Spring-Summer 1955. [Reprint of "The Contradiction of Wilderness Preservation in a Democracy," which appeared in the proceedings of the 1954 convention of Soc. Am. Foresters.]

Our wilderness areas seem impressive on paper. But under pressure for development and multiple use of public lands, they have been reduced for lumbering, they are broken up by private holdings, and they are riddled with roads, resorts, airfields, grazing, fencing, corrals, mining claims, and dams both large and small. Many Forest Service employees have no enthusiasm for wilderness preservation, and the very slight recreational use that wilderness areas receive give them a talking point. National Parks are better protected, but there will be great pressure for continuing development of them. "Wilderness supporters have been chiefly defense minded, rushing to prevent developments that may have been carefully drawn and justified. The majority of areas now called wilderness exist because recreational or industrial developments have not, as yet, been economically feasible. If there were well defined purposes and plans for a national wilderness system which could generate common support the wilderness movement might well be irrepressible. As it is, the disagreement among wilderness proponents is a highly important deterrent to wilderness preservation... There is every indication that wilderness areas of the future will consist of a series of small land units devoid of economic potentials. If attractive, these delicate natural zones will be swarming with outdoor enthusiasts trying to convince themselves that they are enjoying original wilderness conditions... The democracy of providing access to every parcel of our public lands may triumph, but will future generations appreciate this particular brand of wisdom?"

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Schaffner, Bertram, editor. GROUP PROCESSES, TRANSACTIONS OF THE FIRST CONFERENCE. Josiah Macy, Jr. Foundation, Box 575, Packanack Lake, N. J. 317 p., illus. 1955. $5.50.

"...the nearly verbatim report of a multidiscipline conference of outstanding representatives from the fields of zoology, anthropology, ethology, psychology, physiology, and psychiatry..." Discussion topics and leaders were: Ontogeny and living systems, by Frank A. Beach. Psychology and ethology as supplementary parts of a science of behavior, by Niko Tinbergen. Morphology of behavior patterns in closely allied species, by Konrad Z. Lorenz. Dynamics of the mother-newborn relationship in goats, by Helen Blauvelt. The nature of perception, by Daniel S. Lehrman. Group processes in the lower vertebrates, by L. Thomas Evans. The reputations of these authors guarantee the significance of the papers. At least 29 experts participated in the discussions.

Sibley, Charles G. (Cornell U.) THE RESPONSES OF SALT-MARSH BIRDS TO EXTREMELY HIGH TIDES. Condor 57(4): 241-242. July-Aug. 1955.

Behavior of birds and small mammals of the San Francisco Bay (Calif.) area when flooded out by exceptionally high tides.

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY

Cloudsley-Thompson, J. W., editor. BIOLOGY OF DESERTS. Inst. of Biol., London. iv + 224 p., illus. 1954. 14s. [From review by E. K. Reed, Science, 26 Aug. 1955.]

Proceedings of a conference on "The biology and productivity of hot and cold deserts," held in London, Sept. 1952. "Five topics were covered in the several sessions of the conference, as follows (the number of papers for each is given in parentheses): 'Climate and physical environment' (4); 'Plant ecology' (6); 'Entomology and ecology' (5); 'Economic aspects' (4); 'Mammalian physiology and ecology' (9). Six pages of discussions are also included. The second half of the last subject (4 papers) is concerned with adaptability of one particular mammal, our own species... The four papers listed under 'Economic aspects' deal with man-made deserts, desiccation caused by deforestation, cultivation, burning and overgrazing, and programs for halting the march of the deserts." The papers are interesting and valuable. They constitute an important compilation.

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY--Continued

Hardy, G. A. (Prov. Mus., Victoria, B. C.) THE NATURAL HISTORY OF THE FORBIDDEN PLATEAU AREA, VANCOUVER ISLAND, BRITISH COLUMBIA. B. C. Prov. Mus. Nat. Hist. & Anthrop., Rep. for year 1954. p. 24-63, illus. 1955.
Discussion of area, lists of plants and invertebrates, annotated lists of amphibians, birds, and mammals.

Johnson, Harry McClure. WINTER MICROCLIMATES OF IMPORTANCE TO ALASKAN SMALL MAMMALS AND BIRDS. Ph. D. thesis, Cornell U. 139 p. 1955. [From long abstract in Dissertation Abstracts 15(6).]

Kimble, G. H. T., and Dorothy Good, eds. GEOGRAPHY OF THE NORTHLANDS. John Wiley and Sons, N. Y. 534 p., illus. 1955. $10.50. [From review by N. W. Hosley, J. Forestry 53(9).]
"Fourteen specialists on the northlands wrote the various chapters. The material is handled in two ways. First, the general characteristics of the Arctic and Subarctic as a whole are considered under 12 heads. These include such things as physiography, water masses, weather, marine life, and aboriginal populations--subjects which can best be treated on an overall basis. Then the whole area is discussed in 14 regional studies giving the salient features of each. Each chapter has a selected list of references... The text is easily understandable and gives a good, general account of the northlands, their climate, vegetation, animal life, people, and resources." The book is not intended to present a complete treatment of any single topic, but it is a valuable general work.

Moreau, R. E. (Ed. Grey Inst., Oxford, Eng.) ECOLOGICAL CHANGES IN THE PALAEARCTIC REGION SINCE THE PLIOCENE. Proc. Zool. Soc. London 125(1): 253-295, maps. May 1955.
Important, well documented account of time and number of glacial advances, distribution of glaciers, sea-level changes, vegetative changes at different times, interglacials, interstadials, and changes since last glaciation.

Waterhouse, F. L. MICROCLIMATOLOGICAL PROFILES IN GRASS COVER IN RELATION TO BIOLOGICAL PROBLEMS. Royal Meteorological Soc. (Cromwell Rd., London S.W. 7.), Quart. J. 81(347): 63-71. Jan. 1955. Reprint 25¢. [From J. Forestry 53(8).]

WILDLIFE--PARASITES AND DISEASES

Baer, Jean G. RÉVISION TAXONOMIQUE ET ÉTUDE BIOLOGIQUE DES CESTODES DE LA FAMILLE DES TETRABOTHRIIDAE PARASITES D'OISEUX DE HAUTE MER ET DE MAMMIFÈRES MARINS. Mémoires de l'Université de Neuchâtel, Série in-quarto, 1. 123 p. + 82 figs. 1954. 20 Swiss francs. [From long review by Miriam Rothschild, Nature, June 18, 1955.]

Latham, Roger M. (Pa. Game Comm.) COMMON DISEASES AND PARASITES OF WILD ANIMALS. Pa. Game News 26(9): 17-25, illus. Sept. 1955.
Popular article on diseases and parasites of Pa. game birds and mammals. Contains some information on incidence and importance of the diseases in Pa., and provides a useful review of the whole subject.

Miller, Norman G., and Charles H. Drake. INFECTIOUS DISEASES IN NATIVE WILD ANIMALS OF THE COLUMBIA BASIN, WASHINGTON. Northwest Sci. 28(4): 135-156. Nov. 1954. [From J. Mamm. 36(3).]

WILDLIFE--MORTALITY FROM INSECTICIDES, WEATHER, CARS, ETC.

DeWitt, James B. (Patuxent Refuge, Laurel, Md.) EFFECTS OF CHLORINATED HYDROCARBON INSECTICIDES UPON QUAIL AND PHEASANTS. J. Agr. & Food Chem. 3(8): 672-676. Aug. 1955.

Summary: "Previous studies had shown that heavy or repeated applications of DDT resulted in decreases in bird populations, but long-range effects of this and other chlorinated hydrocarbon insecticides had not been fully evaluated. Experiments were conducted to determine toxicity to quail and pheasants of aldrin, dieldrin, endrin, and strobane, and to determine effects of these compounds upon survival, growth, and reproduction. Feeding of diets containing 0.02% DDT to breeding quail resulted in significant decreases in hatchability of eggs and in viability of chicks. Similar results were obtained by feeding 0.001% dieldrin, but effects upon reproduction of short-term feeding of aldrin and endrin could not be determined. Aldrin, dieldrin, and endrin were lethal to both male and female quail when fed at levels of 0.0005% in the diets. Female pheasants appeared more resistant than males to the effects of these compounds."

Oettingen, W. F. von. THE HALOGENATED ALIPHATIC, OLEFINIC, CYCLIC, AROMATIC, AND ALIPHATIC-AROMATIC HYDROCARBONS INCLUDING THE HALOGENATED INSECTICIDES, THEIR TOXICITY AND POTENTIAL DANGERS. US Pub. Health Serv. Publ. no. 414. ix + 430 p. 1955. $2.50 (cloth) from Superintendent of Documents.

This encyclopedic book treats many commonly used chemicals and it should be a useful reference on them for chemist, toxicologist, and biologist. As the author states in his preface, "...the chemistry, analytical procedures, potential uses, investigative toxicology, clinical toxicology, and the prophylaxis and treatment...will be discussed." Scores of compounds are treated and the most studied ones are treated at length. DDT, for example, receives 43 pages and some 170 references to it are cited.

WILDLIFE--MANAGEMENT--GENERAL

Allen, John M., editor. INDIANA PITTMAN-ROBERTSON WILDLIFE RESTORATION 1939-1955. Ind. Dept. Cons., PR Bul. no. 3. 1-240 p., illus. July 1955.

An important, attractive, simply written reference on Ind. game and game management. Its enigmatic, routine title will cause this volume to be overlooked in reference work, but actually the book is of considerable reference value and should be in every collection of publications on wildlife of eastern U. S. Printed on glazed paper and well illustrated with photographs and maps, this book brings together in considerable detail all that has been learned about game by the state's PR projects. The separate chapters are written by specialists. Here in one volume we can find out what is known of the past and present status, distribution, biology, harvests, and management of prairie chicken, deer, pheasant, muskrat, waterfowl, bobwhite, chukar, squirrels, and ruffed grouse in Ind. Most of these chapters would constitute valuable separate publications. Chapters on squirrels, bobwhite, and waterfowl presumably are based on the Ind. monographs on these groups. Other chapters tell about the state's game management areas and what is being done on them, about the farm wildlife management program, and about woodland game developments. The pheasant chapter includes an evaluation of stocking that is a worthwhile contribution to the subject and supports other recent evaluations. The chapter on farm game habitat restoration contains an unusually good summary of evidence that favors multiflora rose.

Keefe, Jim. (Mo. Cons. Comm.) LOWDOWN ON THE DELTA. PART II. Mo. Cons. 16(8): 1-4 p., illus. Aug. 1955.

Part I described swampy se. Mo. and the extensive drainage that has turned it into flat, fertile farmland criss-crossed with canals. Part II discusses the present game conditions of the region. Fertility, much water area, and cover along canals have produced surprisingly good hunting and trapping year after year, and no adverse change is expected. The situation of bobwhite and mammalian game and fur animals is discussed species by species. Waterfowl hunting is good and is being improved by management areas.

WILDLIFE--MANAGEMENT--GENERAL--Continued

McGinnes, Burd S. UPLAND GAME INVESTIGATIONS IN DELAWARE 1949-1955. Del. Bd. Game & Fish Comms., Fed. Aid Publ. no. 3. 1-43 p., illus. 1955.
Semipopular summary of 6 years of work. The first section describes census methods used and their results for cottontail, pheasant, bobwhite, gray squirrel, mourning dove, woodcock, and deer. Data on weights and age groups are given for deer. Reported statewide kills of the above mentioned species (except deer) are tabulated for 16 years, 1936-52, and trends are discussed. Despite increased hunting, kills of rabbits and doves are down, but kills of the other species show no particular trend. Studies on the Petersburg Game Management Area gave an important result: intensive habitat improvement for 4 years, plus increased hunting pressure, gave bobwhite and rabbit kills that were approximately double those at the beginning. [Cost per added head of game?] Less than 14% of quail were bagged annually; apparently hunting was not much of a limiting factor, for population could have endured harvest 3-4 times heavier. Success of farm-game plantings was evaluated. It was judged that 76% of upland plantings were successful in providing food or cover. Experiments in selecting shrub lespedezas for Del. are described.

WILDLIFE--MANAGEMENT--FARM

Gysel, Leslie W., and Walter Lemmien. (Mich. St. U., E. Lansing.) THE GROWTH AND WILDLIFE USE OF PLANTED SHRUBS AND TREES AT THE W. K. KELLOGG MULTIPLE USE FOREST. Mich. St. U., Quart. Bul. 38(1): 139-145, illus. Aug. 1955.
Report on old wildlife plantings in Kalamazoo Co., Mich. Plants involved are Amorpha fruticosa, Caragana arborescens, Cornus amomum, Rosa multiflora, Lonicera tatarica, Elaeagnus angustifolia, and Sorbus aucuparia. Data are given on growth habit, average production of fruit in 1953 and 1954, period of fruit retention, and on the species of birds and mammals associated with each type of planting. "Survival and growth of the plants was generally good. Each of the plantings added to the diversity of cover in the area. The densest summer and winter cover for animals near the ground was provided by Tatarian honeysuckle and multiflora rose. The indigobush amorpha was the only planting to increase in size from seedlings and root suckers." Fruit production was much less in 1954 than in 1953. "From trapping records and observations there is evidence that a variety of animals, mainly small insectivores, rodents, and song birds were associated with each of the plantings. The only plant species intensively used, however, was multiflora rose which was utilized by cottontails, deer, or songbirds for both food and cover throughout most of the year." About 90% of the heavy rose fruit crop of 1953 was consumed by spring.

Little, Harold Alfred. AN EVALUATION OF VIRGINIA'S FARM GAME PROGRAM. M. S. thesis, Va. Poly. Inst. 98 p., illus., 1951. [Copy in US Dept. Int. Library.]

Robbins, Russell Lee. EFFICIENCY OF THE OHIO GAME FLUSHING BAR UNDER IOWA CONDITIONS. M. S. thesis, Iowa St. Coll. ii + 45 p., illus. 1954. [Copy in US Dept. Int. Library.]

WILDLIFE--MANAGEMENT--FOREST AND RANGE

Leedy, Daniel L. (US F&WS.) SOME CONTRIBUTIONS OF THE COOPERATIVE WILDLIFE RESEARCH UNITS TO FOREST WILDLIFE MANAGEMENT. J. Forestry 53(9): 630-635. Sept. 1955.
Describes history and organization of the units and discusses accomplishments in studies of various groups of forest animals.

WILDLIFE--MANAGEMENT--FOREST AND RANGE--Continued

Martin, S. C., R. L. Dunkeson, and T. S. Baskett. (Central States Forest Exp. Sta., Columbus 15, Ohio.) TIMBER HARVESTS HELP OFFSET FORAGE DECLINE IN MISSOURI'S MANAGED FORESTS. J. Forestry 53(7): 513-516, illus. July 1955.

This quantitative paper demonstrates that "Under the conditions sampled, a marked increase in herbaceous vegetation may be expected in the openings created by cutting or girdling the large overstory trees... Most of the forage plants on both released and unreleased plots were forbs, next came grasses, and last were browse plants. All classes were increased by release. Forage increases in small forest openings are probably more valuable for deer than for cattle."

WILDLIFE--MANAGEMENT--WET-LAND

Barber, Yates Middleton, Jr. EXPERIMENTS IN CONTROL OF NEEDLERUSH WITH HERBICIDES: WITH OBSERVATIONS ON PLANT SUCCESSION. M. S. thesis, N. C. St. Coll. 1955. [From Wildlife Curriculum News Letter no. 1. (N. C. St. Coll.)]

"Eleven herbicide compounds were tested on needlerush (Juncus Roemerianus Scheele). Of these only the isopropyl ester of 2,4-D, at a rate of 26.7 pounds acid equivalent per acre gave 100 per cent kill. Treatment near the time of anthesis was most effective. Following needlerush control, test areas were dominated by perennial plants associated with needlerush at the time of treatment. These were Cladium jamaicense Crantz., Eleocharis rostellata Torr., Fimbristylis castanea (Michx.) Vahl., and Scirpus Olneyi Gray. Acnida cannabina L. was the only annual plant forming an important intermediate successional state. Wildlife values of the invading plants were generally low." [See WR 73: 83.]

Van Gordon, Larry. (Chipman Chem. Co., Bound Brook, N. J.) THE CHEMICAL AGE VS. AQUATIC WEEDS. N. J. Outdoors 6(2): 18-21, illus. Aug. 1955.

Chiefly contains concrete information on control of submerged aquatics with sodium arsenite. Also mentions value of sodium chlorate against cattail.

WILDLIFE--MANAGEMENT--PREDATION, CROP DAMAGE, AND CONTROL

Tener, J. S. (Banff, Alberta.) THREE OBSERVATIONS OF PREDATORS ATTACKING PREY. Can. Field-Nat. 68(4): 181-182. Oct.-Dec. 1954. [Sept. 1955.]

Red-tailed hawk killing young crow, polar wolf attacking arctic hare, and golden eagle killing a Canada goose. Two observations on behavior of arctic hare are of interest: 1. Bipedal, kangaroo-like locomotion was used by hares when closely pursued. 2. Rest of hare herd paid little attention as a wolf chased a hare on a zig-zag path through the herd.

WILDLIFE--REPORTS OF ORGANIZATIONS

Oregon. 1955 ANNUAL REPORT / OREGON STATE GAME COMMISSION / GAME DIVISION. vi + 192 p., illus. 1955.

This is the game encyclopedia that Ore. publishes annually. It is not an ordinary administrative report but a compilation of freshly gathered data on all sorts of Ore. game. Species by species, and in detail, facts and figures are given on status, production, population trends, kills, sex ratios, and hunting statistics. Take of fur animals and predators is reported in detail. Projects of Ore. Coop. Wildl. Res. Unit are reported in long summaries. Management work done for big game, small game, and waterfowl is reported thoroughly.

WILDLIFE--REPORTS OF ORGANIZATIONS--Continued

STUDY OF THE OPERATIONS OF THE FISH AND WILDLIFE SERVICE. Hearings before Committee on Merchant Marine and Fisheries, House of Representatives, 84th Congress, 1st Session. iii + 273 p., illus. 1955.
This thick document consists of statements and reports made by F&WS personnel, and replies that they gave to questions of committee members. Presenting as it does a great deal of information on the functions, finances, and thinking of the F&WS, and reflecting as it does various attitudes of committee members, the volume is of some current reference value and some historical value.

Texas Legislative Council. WILDLIFE MANAGEMENT IN TEXAS. Staff Res. Rep. to Texas Legislative Council (Austin), no. 53-4. iv + 223 p., maps & graphs, + 12 p. appendix + 3 large maps. Nov. 1954.
This thick, informative volume begins with a detailed history of wildlife conservation in Texas and a critique of present activities of the Fish & Game Commission. The next 2 chapters deal with the origins and present status of wildlife legislation in the state. Chapter 4 is an analysis of Fish & Game Commission revenue sources, including discussion of reversion of PR funds. Chapter 5 describes functions of the Commission and contains material for evaluation of some activities. One significant part of this chapter consists of figures and graphs which seem to show that predator control has been ineffective in increasing kills of deer and turkey. Chapter 6 is a long and thought-provoking discussion of wildlife problems in the state. This includes consideration of the regulatory authority of the Commission, advisable use of PR funds, and possible actions on endangered species, refuges, harvest controls, distribution of research, and other material.

MAMMALS--GENERAL

Fawcett, D. W., and C. P. Lyman. THE EFFECT OF LOW ENVIRONMENTAL TEMPERATURE ON THE COMPOSITION OF DEPOT FAT IN RELATION TO HIBERNATION. J. Physiol. 126(2): 235-247. Nov. 1954. [From J. Mamm. 36(3).]

Musacchia, X. J., C. G. Wilber, and T. W. Gorski. (St. Louis U.) HEMATOLOGICAL STUDIES ON MAMMALS FROM ALASKA. J. Mamm. 36(3): 362-368. Aug. 1955.
Concentration and size of red cells, concentration of leucocytes, percentages of types of leucocytes. Species studied: Citellus parryii, Citellus osgoodi, Sciurus hudsonicus, Microtus macfarlani, Lepus americanus, Erethizon epixanthum, Sylvilagus sp., Mustela erminea, Marmota monax, Ondata zibethicus, Ursus americanus.

Petter, F. MÉTHODE RAPIDE DE CONSERVATION DES CADAVRES DE PETITS MAMMIFÈRES SUR LES LIEUX DE COLLECTE. Mammalia 18(4): 422-423. Dec. 1954. [From J. Mamm. 36(3).]

MAMMALS--FAUNAS AND MANUALS

Brown, N. R., and R. G. Lanning. (U. of N. B., Fredericton.) THE MAMMALS OF RENFREW COUNTY, ONTARIO. Can. Field-Nat. 68(4): 171-180. Oct.-Dec. 1954. [Sept. 1955.]
The county lies along the Ottawa R. between Ottawa and Algonquin Natl. Park. This paper tells what is known of the status of each species, gives specific records, and lists measurements for many of the smaller species.

MAMMALS--FAUNAS AND MANUALS--Continued

Cockrum, E. Lendell. (U. Ariz.) LABORATORY MANUAL OF MAMMALOGY. Burgess Publ. Co., 426 S. 6th St., Minneapolis 15, Minn. iii + 160 p., illus. 1955. Spiral binding. $4.00.

Deserves consideration by anyone teaching mammalogy and has considerable reference value for the non-mammalogist. It is partially text and reference, partially blank-sheet workbook. Text parts consist mainly of outlines of technical subjects, with sentences or paragraphs of information about most subjects. Among the good features are keys to orders, families, and genera of N. A. mammals; good exposition of skull characters; detailed outline for life history studies; list of major state and provincial mammal papers; list of life history papers; and good lists of references at ends of chapters. Many other topics are treated: external characters, techniques of age determination, pelages and molts, geological history, distribution and migration, hibernation, reproduction, territories and home ranges, population estimation, population fluctuations, and directions for collecting and studying in field. Some of these topics are covered so briefly that lectures and reading will be needed to put meat on the bones of the outlines; presumably this is the intention. On the other hand, a surprising amount of technical detail is given on such borderline matters as genetics of coat color and types of placentae. We would rather have seen this space devoted to interpretation of reproductive condition, a subject neglected here. We would also have preferred a more critical approach in the chapters on home ranges and populations, for here there is a tendency to list and discuss both good and bad methods as if all were good. However, the author has defined mammalogy broadly and he is to be congratulated on covering the ramifications of his subject as competently as he has.

McKeever, Sturgis. (US Pub. Health Serv., Newton, Ga.) ECOLOGY AND DISTRIBUTION OF THE MAMMALS OF WEST VIRGINIA. Ph. D. thesis, N. C. St. Coll. 335 p. 1955. [From Wildlife Curriculum News Letter no. 1. (N. C. St. Coll.)]

"This work is the result of two years intensive field investigations by the author and the equivalent of two man-years' work by seven other biologists employed on Pittman-Robertson Project W. Va. 22-R... The ecological factors which limit mammalian distribution are discussed. Seventy-eight Recent species and subspecies are treated. A statement of the animal's range within the state, external measurements, ecology, and biology is included. A list of localities for both specimens examined and literature records is given. Localities are plotted on a range map for each form; the North American range of each species is also shown. Skull measurements are presented in tabular form. Hypotheses are presented to explain the late Pleistocene and Recent distribution of each form... Nine species have been extirpated within historical time; one has been reintroduced; and, one has reentered the state..." Five named forms are added to state list. Subspecific identifications of several mammals are altered. [See WR 71: 14.]

MAMMALS--COMMUNITIES, NUMBERS, HOME RANGES

Barbehenn, Kile Ray. STUDIES OF SMALL MAMMALS ON ABANDONED FARM LAND IN SOUTHCENTRAL NEW YORK. Ph. D. thesis, Cornell U. 102 p. 1955. [From long abstract in Dissertation Abstracts 15(6).]

"Emphasis was gradually focused on three aspects of the research: 1. the ecological distribution and relative abundance of small mammals on abandoned farm land; 2. the interrelationships between Microtus and the short-tailed shrew (Blarina brevicauda); and, 3. the growth rate of Microtus in the field."

MAMMALS--COMMUNITIES, NUMBERS, HOME RANGES--Continued

Christian, John J. (Nav. Med. Res. Inst., Bethesda 14, Md.) THE EFFECT OF POPULATION SIZE ON THE WEIGHTS OF THE REPRODUCTIVE ORGANS OF WHITE MICE. Nav. Med. Res. Inst., Res. Rep. vol. 13: 81-88, graphs. Mar. 1955. [This paper will also appear in Am. J. Physiol.]

Experiments with 1-32 male mice per small cage demonstrated "significant declines in the weights of the seminal vesicles, preputial glands, and testes with increasing population crowding. Progressive increases in the size of the adrenal glands (adrenocortical tissue) with progressive decreases in the size of the organs of reproduction are believed to have resulted from increasing levels of stress with increasing population pressures."

MAMMALS--PARASITES AND DISEASES

Gale, Larry R. (Ky. Dept. Wildl. Resources.) ONLY ONE STATE AHEAD OF KENTUCKY IN OCCURRENCE OF RABIES. Ky. Happy Hunting Ground 11(5): 30-31, illus. Sept. 1955.

Tabulates recorded cases, 1952-55, by major host species, and gives totals for 1950 and 1951. Discussion brings out fact that in some counties rabies is primarily in domestic animals, while in other counties it is primarily in wild animals, while in another group of counties it is in both. Foxes, especially gray foxes, are the only important wildlife hosts of rabies in Ky. In 1955, control of foxes was begun in counties that had rabies in wildlife. Technique used was den gassing done by game officers after den locations were reported by farmers or others. Public interest was slight and by July 1 only about 70 dens had been treated.

Helmboldt, C. F., and E. L. Jungherr. (Agr. Exp. Sta., U. Conn.) DISTEMPER COMPLEX IN WILD CARNIVORES SIMULATING RABIES. Am. J. Vet. Res. 16(60): 463-469, illus. July 1955.

Thirty-five Conn. carnivores (14 gray foxes, 3 red foxes, 16 raccoons, 2 skunks) were turned in for diagnosis because their bold behavior or depraved appetites (such as drinking kerosene) suggested rabies. Rabies was not found but canine distemper was diagnosed in 20 animals and suspected in more. Apparently distemper may produce much the same behavior as rabies. "Complete histological examinations, in conjunction with mouse and ferret inoculations, are important diagnostic aids in the exclusion of feral rabies." Encephalitis was diagnosed in 20 individuals. Other diseases and parasites that were found in the animals are listed and some are discussed briefly.

Hine, Ruth L. (Wis. Cons. Dept.) RABIES IN WISCONSIN. Wis. Cons. Bul. 20 (7): 25-28, 2 figs. July 1955.

General article on occurrence, significance, and prevention. Rabies is not common in Wis.; there have been only 2 cases in man since 1941. Incidence in wild and domestic animals peaked at 128 cases reported in 1940. As graph shows, 1928 was another peak year, and incidence is rising in 1950's. Lowest incidence of rabies in state is in n. and central counties. Wildlife species have represented half or more of reported cases in recent years. Animal most often affected is skunk; rabies is infrequent in other wild mammals in Wis.

Jones, John C. (US F&WS.) THE STATUS OF RABIES IN THE MIDDLE ATLANTIC STATES OF VIRGINIA, WEST VIRGINIA, MARYLAND, DELAWARE, AND THE DISTRICT OF COLUMBIA FOR THE FISCAL YEAR 1953-1954. Md. Cons. 32(4): 6-11, illus. July 1955.

Nouvel, J. LES SPIROCHÉTOSES DES ANIMAUX SAUVAGES (PART II). Mammalia 18 (3): 277-286. Sept. 1954. [From J. Mamm. 36(3).]

MAMMALS--PARASITES AND DISEASES--Continued

RABIES IN THE UNITED STATES IN 1954. J. Am. Vet. Med. Assn. 127(942): 240, map. Sept. 1955.

"During 1954, 7,282 cases of rabies were reported--4,083 in dogs, 462 in cats, 930 in cattle, 29 in horses, 23 in sheep, 40 in swine, and 10 in goats. The 1,672 miscellaneous cases reported occurred in 1,028 foxes, 547 skunks, 48 raccoons, 8 squirrels, 5 coyotes, 5 muskrats, 4 bobcats, 2 wolves, 2 bats, and 43 other wild animals. There were 8 cases in man. Virginia, New York, Alabama, and Texas each had over 100 cases in foxes. Iowa and Minnesota each had over 100 cases in skunks. Florida had 16 raccoon cases. The 2 rabid bats were found in Texas which led all states with a total of 1,081 cases, 799 of which were in dogs. New York had 250 cases in cattle, Missouri 78, Tennessee 75, Minnesota 76, and Iowa 59." Copied completely except for map showing number of cases per state.

Rausch, Robert. (Arctic Health Res. Center, Anchorage, Alaska.) A SUMMARY OF CURRENT INFORMATION ON SOME ANIMAL-BORNE DISEASES IN ALASKA. Sci. in Alaska 1952. Proc. 3d Alaskan Sci. Conf., Alaska Div. A.A.A.S., p. 141-147. Published at College, Alaska, Sept. 1954.

Diseases for which Alaskan information is summarized are echinococcosis, trichinosis, diphyllobothriasis, rabies, tularemia, and canine distemper.

MAMMALS--SHREWS, MOLES, BATS

Dorst, Jean. LA LONGÉVITE DES CHIROPTÉRES. Mammalia 18(3): 231-236. Sept. 1954. [From J. Mamm. 36(3).]

Gould, Edwin. (Cornell U.) THE FEEDING EFFICIENCY OF INSECTIVOROUS BATS. J. Mamm. 36(3): 399-407. Aug. 1955.

"An analysis has been made of the insects captured by bats on the wing, based both on a survey of published records and a program of collecting bats to analyze the contents of their digestive tracts. Special attention was paid to the sizes of the insects and to the rates at which insects are caught; and this data is discussed in relation to the hypothesis advanced by Griffin that insects are located and captured by means of the bats' high frequency sounds." Bats fill their stomachs with impressive speed; a gram per hour is not uncommon for Myotis lucifugus, and a maximum of 3.3 grams per hour was recorded for Pipistrellus subflavus. Random, filtering-type feeding cannot account for such rates. It is likely that individual insects are located, pursued, and captured at rates of the order of one every few seconds. Studies of echoes from insects have given evidence consistent with the hypothesis that flying insects are found by echolocation.

Jameson, E. W., Jr. (U. Calif., Davis.) OBSERVATIONS ON THE BIOLOGY OF SOREX TROWBRIDGEI IN THE SIERRA NEVADA, CALIFORNIA. J. Mamm. 36(3): 339-345, graphs. Aug. 1955.

Summary: "Sorex trowbridgei is a common forest-dwelling shrew; it occurs sparingly in brushlands and cutovers. Arthropods comprise the bulk of the food; earthworms and planarians are sometimes eaten. The fall molt occurs from August to November, but most often in October; a few adults acquire a second summer (brown) pelage in June, July, or August. The Trowbridge shrew is short-lived; adults disappear rapidly during May, June and July. Breeding extends from February until early June, after which time most of the remaining adults are in a non-breeding condition. The mean number of young was five; extremes were one and six. Evidence indicates that post-partum pregnancies are rather frequent."

Krutzsch, Philip H. (U. Pittsburgh.) ECTOPARASITES FROM SOME SPECIES OF BATS FROM WESTERN NORTH AMERICA. J. Mamm. 36(3): 457-458. Aug. 1955.

MAMMALS--SHREWS, MOLES, BATS--Continued

Krutzsch, Philip H. (U. Pittsburgh.) OBSERVATIONS ON THE CALIFORNIA MASTIFF BAT. J. Mamm. 36(3): 407-414. Aug. 1955.
All that is known about biology, ecology, and natural history of this bat is brought together and new data are added.

Mahalev, M. S., Jr. EXPERIMENTAL EVIDENCE ON THE BODY TEMPERATURES OF HIBERNATING BATS. Bios 25(2): 107-110. May 1954. [From J. Mamm. 36(3).]

Rudd, Robert L. (U. Calif., Davis.) AGE, SEX, AND WEIGHT COMPARISONS IN THREE SPECIES OF SHREWS. J. Mamm. 36(3): 323-339, illus. Aug. 1955.
Detailed studies were made of Sorex ornatus, S. sinuosus, and S. vagrans in the San Francisco Bay Region, Calif. Age determination is discussed at length, with comparisons of systems of other workers and Rudd's own system. Results of this work are described. Longevity is considered. Sex and age composition of populations throughout year are treated thoroughly. Breeding season is discussed. Seasonal weights of sex and age groups of each of the 3 species are tabulated and graphed.

Twente, John W., Jr. (U. Fla.) ASPECTS OF A POPULATION STUDY OF CAVERN-DWELLING BATS. J. Mamm. 36(3): 379-390, map & graph. Aug. 1955.
Myotis velifer, Corynorhinus rafinesquei, Antrozous bunkeri, and Eptesicus fuscus were studied in gypsum caverns of Kans. and Okla. Data pertain chiefly to Myotis. Topics discussed are: travels between caverns, homing, survival rate, experiments on how caverns are found, sex ratio, age determination, age ratios, predation on bats, relative numbers of bat species studied, possible limiting factors.

MAMMALS--RABBITS AND PIKAS

Bloch, S., H. Hediger, C. Müller, and F. Strauss. PROBLEME DER FORTPFLANZUNG DES FELDHASEN. Rev. Suisse Zool. 61(26): 485-490. Sept. 1954. [From J. Mamm. 36(3).]

Fay, Francis H., and Edwin H. Chandler. (U. of B. C., Vancouver.) THE GEOGRAPHICAL AND ECOLOGICAL DISTRIBUTION OF COTTONTAIL RABBITS IN MASSACHUSETTS. J. Mamm. 36(3): 415-424, illus. Aug. 1955.
Sylvilagus transitionalis and S. floridanus: distinctions between the species (includes helpful drawings), variation within each species, possible interbreeding, habitat preferences, ranges, relative kills of the 2 species. Summary: "Massachusetts was formerly inhabited by one species of rabbit, the New England cottontail (Sylvilagus transitionalis), but since 1900 about three-fourths of the state has been invaded by subspecies of S. floridanus. In an apparent response to changing agricultural practices in southern New England, the eastern cottontail (S. f. mallurus) has spread rapidly northeastward, supplemented by introductions of midwestern rabbits, and has completely replaced transitionalis in some local areas. Since a sample from the hunters' bag shows floridanus to be the more important game species of the two, it has been suggested that emphasis be placed on its management in the future."

Truax, W. C. (Wis. Cons. Dept.) COTTONTAILS APLENTY. Wis. Cons. Bul. 20 (8): 3-8, illus. Aug. 1955.
Briefly discusses measures Wis. is using in "rabbitat management" and encourages clubs to join in the work. Rabbits respond quickly to a moderate amount of work on habitat improvement, and the improvements ultimately lead to better quail and pheasant hunting.

MAMMALS--RABBITS AND PIKAS--Continued

Tyndale-Biscoe, C. H., and R. M. Williams. (DSIR, Wellington, N. Z.) A STUDY OF NATURAL MORTALITY IN A WILD POPULATION OF THE RABBIT, ORYCTOLAGUS CUNICULUS (L.). N. Z. J. of Sci. & Tech., Section B, 36(6): 561-580, illus. May 1955.

Summary: "A wild population of rabbits was studied by individually marking 236 young and adult rabbits during one breeding season. At the end of the season a large part of the population was killed and 116 marked rabbits were recovered. The survival rates of young rabbits with respect to age and of adult rabbits were obtained by the use of maximum likelihood estimates of the chance of survival from one age interval (of 26 days) to the next. These results were checked by reference to the unmarked rabbits killed and other data obtained from monthly samples taken from the same district. The survival rate of young rabbits was found to be about 70% per 26 day period for about the first 120 days after birth, and this was followed by a fairly rapid and statistically significant change to about 89% per 26 days, or 20% per annum, which was also the adult survival rate. A correspondence was shown between the low survival rate in young rabbits and the high proportion of rabbits of this age which were severely infected with liver coccidia (Eimeria stiedae), and it is suggested that this parasite in conjunction with predators may be an important mortality factor in young rabbits. From 1,140 unmarked rabbits, collected after the kill, it was shown that a far higher proportion was present on the central, forested part of the area than on the surrounding grassland, and it was suggested that this part may be a 'station of survival' for the rabbit population at low densities and a centre of dispersal at high densities."

MAMMALS--RODENTS--MISCELLANEOUS

Chew, Robert M. (U. So. Calif.) THE SKIN AND RESPIRATORY WATER LOSSES OF PEROMYSCUS MANICULATUS SONORIENSIS. Ecol. 36(3): 463-467, 1 fig. July 1955.

Dunmire, William W. (MVZ, U. Calif., Berkeley.) SEX DIMORPHISM IN THE PELVIS OF RODENTS. J. Mamm. 36(3): 356-361, illus. Aug. 1955.

"It has been shown that measurable differences in the shape of the innominate bone exist between male and female specimens of the seven species of rodents that were examined, and that in all the rodents studied except Thomomys males can be distinguished from females with a fairly high assurance of accuracy." The method should be of value in food habits work and perhaps other types of studies. It does not seem to be satisfactory for young animals.

Hooven, E. F. A FIELD TEST OF TETRAMINE TREATED DOUGLAS FIR SEED. Ore. St. Bd. Forestry (Salem), Res. Note no. 21. 17 p. 1955. [From J. Forestry 53(9).]

Johnstone, Walter B. (Canal Flats, B. C.) A REVISION OF THE POCKET GOPHER THOMOMYS TALPOIDES IN BRITISH COLUMBIA. Can. Field-Nat. 68(4): 155-164, illus. + 2 plates. Oct.-Dec. 1954. [Sept. 1955.]

Six races are recognized. Two of them are new. Ranges of 5 of the 6 reach the U. S. border.

Leslie, P. H., J. S. Tener, Monica Vizoso and Helen Chitty. (Bur. An. Pop., Oxford, Eng.) THE LONGEVITY AND FERTILITY OF THE ORKNEY VOLE, MICROTUS ORCADENSIS, AS OBSERVED IN THE LABORATORY. Proc. Zool. Soc. London 125(1): 115-125. May 1955.

Life tables, fertility table, and intrinsic rate of increase, along with the statistical procedures. Comparison with the mainland vole, M. agrestis, indicated a shorter life span for the mainland species.--L. F. Stickel.

McCarley, W. H. (Stephen F. Austin St. Coll.) NATURAL HYBRIDIZATION IN THE PEROMYSCUS LEUCOPUS SPECIES GROUP OF MICE. Evolution 8(4): 314-323, illus. Dec. 1954. [From J. Mamm. 36(3).]

MAMMALS--RODENTS--MISCELLANEOUS--Continued

Odum, Eugene P. (U. Ga.) AN ELEVEN YEAR HISTORY OF A SIGMODON POPULATION. J. Mamm. 36(3): 368-378, illus. Aug. 1955.
An old-field cotton rat population in Ga. was sampled 1944-54 in the fall of each year, and in the spring of 7 years. Snap-traps were used for 3 nights, in half-acre quadrats or in double 475-foot lines. Peak numbers were taken in 1946, 1948 and 1952. Fall numbers exceeded spring numbers. Data are given on age and weight in relation to numbers, reproduction in relation to weight, and survival. The fact that the lines captured twice as many rats as a half-acre kill-trapped quadrat is taken to indicate that the lines sampled approximately an acre. The reviewer would consider this evidence that the lines sampled significantly more than an acre.--L. F. Stickel.

Rainey, Dennis G. (U. Kans.) OBSERVATIONS ON THE WHITE-FOOTED MOUSE IN EASTERN KANSAS. Trans. Kans. Acad. Sci. 58(2): 225-228. 1955.
Limestone outcroppings in suitably vegetated or wooded areas constituted the preferred habitat. Numbers were highest during a wet period, 1951 and early 1952. Rapid decline and low populations coincided with drought in late 1952 and in 1953. Travel, longevity, and other observations are also noted.--L. F. Stickel.

Reed, Edward B. (Colo. A & M Coll.) JANUARY BREEDING OF PEROMYSCUS IN NORTH CENTRAL COLORADO. J. Mamm. 36(3): 462-463. Aug. 1955.

Thompson, Daniel Q. (U. Mo.) THE 1953 LEMMING EMIGRATION AT POINT BARROW, ALASKA. Arctic 8(1): 37-45, illus. Winter 1955.
Ecology of brown lemming, Lemmus trimucronatus, was studied summers 1950-54. Die-offs were in 1949 and 1953. Increase became evident in 1951. By spring of 1953, lemmings were everywhere but concealed by snow. Over 99% of vegetation had been clipped. Lemmings began to wander as snow thawed. Wanderings were haphazard, not mass emigrations, and did not involve most of population. Wandering and nonwandering (resident) lemmings were compared as to behavior, sex ratio, age ratio, weight, adrenal weight, size of uterine horns, and testis weight. Among the emigrants, 4 out of 5 were males, and testes and uterine horns were significantly smaller. Emigrants weighed less but were still fat. Their adrenals averaged heavier (samples small; significance not proved). Wanderings ceased as thawing exposed food and permitted growth of vegetation. Wanderings did little to relieve population pressure, less than predation did. Comparisons are made with other lemming emigrations.

Thompson, Daniel Q. THE ECOLOGY AND POPULATION DYNAMICS OF THE BROWN LEMMING (LEMMUS TRIMUCRONATUS) AT POINT BARROW, ALASKA. Ph. D. thesis, U. Mo. 138 p., illus. 1955.

MAMMALS--RATTUS AND MUS

Buell, Noble E. (US F&WS, Mitchell, S. Dak.) RODENT CONTROL AND GRAIN SANITATION. Pest Control 23(8): 9-10, 21-24, illus. Aug. 1955.
General discussion of grain sanitation problem.

Harrison, J. L. THE MOONLIGHT EFFECT ON RAT BREEDING. Bul. Raffles Mus. (Singapore) no. 25, p. 166-170. Dec. 1954. [From J. Mamm. 36(3).]

Jones, John C. (US F&WS, Wash., D. C.) FILMS AND PUBLICATIONS ON RODENT CONTROL. Pest Control 23(8): 16, 18, 59. Aug. 1955.
Lists several currently available publications and numerous films and film strips on control of house rats and house mice and tells how and where to get these aids.

Mills, Ernest M. (US F&WS, N. J. Coll. Agr., New Brunswick, N. J.) HOW ANTICOAGULANT RODENTICIDES WERE DEVELOPED. Pest Control 23(9): 14-16, 19-21. Sept. 1955.
Documented account of discovery and development of warfarin, coumachlor, pival, and fumarin.

MAMMALS--RATTUS AND MUS--Continued

Oderkirk, G. C., E. M. Mills, and Milton Caroline. (US F&WS, Purdue U.) RAT CONTROL ON PUBLIC DUMPS. Pest Control 23(8): 24, 26, 28, illus. Aug. 1955.
By dump management, poisons, and gas.

Strecker, Robert L. (Miami U., Oxford, Ohio.) FOOD CONSUMPTION OF HOUSE MICE AT LOW TEMPERATURES. J. Mamm. 36(3): 460-462, graph. Aug. 1955.

MAMMALS--SCIURIDS

Herman, Carlton M., and James R. Reilly. (Patuxent Refuge, Laurel, Md.) SKIN TUMORS ON SQUIRRELS. J. Wildl. Mgt. 19(3): 402-403, illus. July 1955.
Skin tumors having the gross appearance of previously reported fibromas are reported on gray squirrels from N. Y., Md., Va., N. C., and W. Va. and from a fox squirrel from W. Va. and a porcupine from Pa.--C. M. Herman.

Hock, Raymond J. (Arctic Health Res. Center, Anchorage, Alaska.) SEASONAL CHANGES IN THE VISCOSITY OF THE BLOOD OF GROUND SQUIRRELS. Sci. in Alaska 1952. Proc. 3d Alaskan Sci. Conf., Alaska Div. A.A.A.S., p. 137-138. Published at College, Alaska, Sept. 1954.
"It appears...that the blood of ground squirrels has adaptive properties which allow it to be modified in accordance with the season. It is also apparent that the relative viscosity of the blood does not react in the normal manner to changes of temperature. That a conservative medium like the blood should show adaptation to the reduction of body temperature is a measure of the completeness with which the bodies and functions of hibernating animals are adapted for the annual, startling change from homoiothermy to poikilothermy."

Luther, Wolfgang. BEOBACHTUNGEN AN NORDAMERIKANISCHEN GLEITFLUGHÖRNCHEN SCIUROPTERUS (GLAUCOMYS) VOLANS (THOMAS). Zeitschr. Tierpsych. 9(2): 402-411. 1952. [From J. Mamm. 36(3).]

Miller-Using, Detlev. BEITRÄGE ZUR OEKOLOGIE DER MARMOTA M. MARMOTA (L.). Zeitschr. Säugetierk. 19(3): 166-177. Dec. 1954. [From J. Mamm. 36(3).]

MAMMALS--BEAVER

Anonymous. LARGE BEAVER. Wash. St., Game Bul. 7(3): 2. July 1955.
Records of wild beavers from Wash. that weighed 86 and 72 lbs.

Peterson, Willis. ARIZONA'S OPERATION BEAVER LIFT. Natl. Geo. Mag. 107(5): 666-680, illus. May 1955.
This popular article on beaver habits and transplanting includes some fine color photos of beavers.

Sherwood, Francis W. (N. Y. Cons. Dept.) BEAVER CONTROL. [Control of water level in beaver ponds.] N. Y. St. Cons. 10(1): 38, illus. Aug.-Sept. 1955.
Descriptions and photos tell how to use long wooden sluice box to keep beaver ponds at desired levels.

Smith, Albert E., and George J. Knudsen. (Wis. Cons. Dept.) BEAVER CONTROL IN WISCONSIN. Wis. Cons. Bul. 20(7): 21-24, illus. July 1955.
"During the 1946-53 period, for which complete records are available, over 3,200 beaver were trapped on 2,300 complaints. About 1,800 of these beaver were live-trapped and transplanted while over 1,400 were steel-trapped. A total of more than 3,400 dams were removed." This article lists many types of damage done and tells how control is exercised. Peak of population, range, and damage in state apparently was reached in late 1940's or early 1950's. Liberal seasons since 1950 have lessened populations and complaints, especially in agricultural s. Wis.

MAMMALS--MUSKRAT AND NUTRIA

Byrd, Mitchell Agee. THE ECONOMIC IMPORTANCE OF THE MUSKRAT IN VIRGINIA, WITH PARTICULAR EMPHASIS ON MONTGOMERY, A MOUNTAINOUS COUNTY. M. S. thesis, Va. Poly. Inst. 224 p., illus. 1951. [Copy in US Dept. Int. Library.]

Gunderson, Harvey L. (Minn. Mus. Nat. Hist., Minneapolis 14.) NUTRIA, MYOCASTER COYPUS, IN MINNESOTA. J. Mamm. 36(3): 465. Aug. 1955.
Summarizes records. None of the records are very recent and it is believed that nutria proved unable to survive long in the wild in Minn.

MAMMALS--FURBEARERS--GENERAL

Ashbrook, Frank G. FUR CATCH IN THE UNITED STATES, 1949-54. US F&WS, Wildl. Leafl. 367. 1-24 p. July 1955.
Under each state the take of each species is listed insofar as possible for each of the last 5 years. Several states are still unable to supply much information on their fur harvests; some others cannot vouch for the accuracy of their reports.

Gale, Larry R. (Ky. Dept. Wildl. Resources.) TOTAL FUR VALUE FOR KENTUCKY UP. Ky. Happy Hunting Ground 11(4): 18, illus. July 1955.
Report on furs purchased in Ky. in 1954-55 season. Table shows number, percent of catch, value, and percent of value for 9 species. Muskrats were most numerous but ranked far below mink in total value. Raccoon prices were up a bit. Other furs were of little financial importance because of minimal trapping pressure resulting from low prices.

Oregon. FUR CATCH REPORT / 1954-55 TRAPPING SEASON. Ore. St. Game Comm. Bul. 10(7): 6. July 1955.
Reported catch of fur animals is tabulated by county, species, and price.

MAMMALS--BEARS

McCracken, Harold. THE BEAST THAT WALKS LIKE MAN / THE STORY OF THE GRIZZLY BEAR. Hanover House, Garden City, N. Y. 1-319 p., illus. 1955. $4.50.
As the dust cover says, this is "The lore, legend and history of the grizzly bear." It is more than that, though, for the author has had vast experience with brown and grizzly bears both as hunter and observer, and his adventures and findings are scattered through the book. In entertaining style, the author covers Indian legends, early experiences of white men with grizzlies, the famous bear-bull fights of the frontier, illustrative hunting experiences, the incredible "Grizzly" Adams, the campaign of eradication, and the present perilous status of the grizzly in the U. S. The book is not organized as it would be by a biologist into chapters on food, breeding, and the like, but there is a good bit of useful information on such topics at various points. Hibernation, behavior, intelligence, strength, numbers and similar subjects are discussed, often incidentally. Closing chapters consist of quotations from various old works on grizzly taxonomy and should have been omitted. The book is difficult to judge. Certainly it is not a monograph on the biology of brown and grizzly bears, but it covers some of the same ground. Few scientific but many historical references are cited; how critically the historical accounts have been used it is hard to say. We can say that anyone concerned with bears will find much of interest here and that general readers will find some exciting reading. And we must credit the author with having tried to create sentiment for preservation of the vanishing remnants of America's greatest carnivore.

MAMMALS--RACCOON AND RINGTAIL

Wood, John E. (Johns Hopkins U. School Hygiene, Balt. 5, Md.) NOTES ON REPRODUCTION AND RATE OF INCREASE OF RACCOONS IN THE POST OAK REGION OF TEXAS. J. Wildl. Mgt. 19(3): 409-410. July 1955.

Ovaries and uteri of 35 females indicated that breeding began during late Jan. and that 43.7% of females had bred by end of Feb. Graafian follicles were found as late as April, suggesting a second oestrum. 40% of the 1-year-old females produced litters and 45.8% of all females were productive. Number of young per litter of all ages was 2.8 as determined from embryo counts and 3.6 as determined from placental scar counts. Resorption of embryos was recorded for 1 female. Sperm tests of 34 males showed that 20% of 1-year-olds were sexually mature. Sex ratio of adults was 92.5 males per 100 females. Rate of increase in population is indicated by a coefficient of birth of 1.5, which indicates an annual increase of this amount.--J. E. Wood.

MAMMALS--MUSTELIDS

Kirkpatrick, Charles M., Donald E. Stullken, and Robert D. Jones, Jr. (Purdue U.) NOTES ON CAPTIVE SEA OTTERS. Arctic 8(1): 46-59, illus. Winter 1955.

Studies aimed at facilitating holding and transplanting were made on Amchitka Island in Feb.-Mar. 1954. Present paper discusses many topics: description, dermal chest pouch, sensitivity to cold, need of water for swimming, sleeping behavior, preening, reactions to handling, foods accepted, quantity of food needed, frequency of feeding required, speed of digestion and elimination (3 hours), drinking, locomotion, sociability, voice. Apparently 2 great difficulties in keeping sea otters in captivity are too much cold and too little and too infrequent feeding. Food is needed 4 times a day with total of 6-7 lbs. per day, for individuals studied.

Lensink, Calvin J. AN INVESTIGATION OF THE MARTEN IN INTERIOR ALASKA. M. S. thesis, U. Alaska. xi + 89 p., illus. 1953. [Copy in US Dept. Int. Library.]

Lensink, Calvin J., Ronald O. Skoog, and John L. Buckley. (U. Alaska.) FOOD HABITS OF MARTEN IN INTERIOR ALASKA AND THEIR SIGNIFICANCE. J. Wildl. Mgt. 19(3): 364-368. July 1955.

Summer food of Martes americana actuosa Osgood, detd. from 374 scats, consisted of 74% microtines (Microtus, Clethrionomys, Lemmus), 7% unidentified birds, and 19% berries (mostly Vaccinium uliginosum). Winter food, detd. from 28 scats and 64 digestive tracts, consisted of 68% microtines, 19% birds, 4% other animal foods, and 9% V. uliginosum. Food availability largely determines marten travels; travels (and trapping success) are least when food is most abundant.--John L. Buckley.

Miller, R. G., R. W. Ritcey, and R. Y. Edwards. (Edwards: B. C. Forest Serv., Victoria.) LIVE-TRAPPING MARTEN IN BRITISH COLUMBIA. Murrelet 36(1): 1-8, map. Jan.-Apr. 1955. [Sept.]

Trapping with light, collapsible live traps in Wells Gray Park, B. C., resulted in 21 marten tagged. Recaptures totaled 26. Most animals appeared to be confining their activities to within 1-3 square miles. Some long, rapid travels were noted: 1 marten moved 4.5 mi. within 24 hours and another apparently ran 1.3 mi. in a single chase after a hare. Travel data of other workers are discussed. Ear tags used were unsatisfactory; a better marking method is needed. Marten is a climax or near climax species. Modern forestry practices tend to perpetuate adequate marten habitat, so management of marten can be considered seriously. Since marten are easily live trapped, restocking is feasible. Some commercial trapping could be done with the light, collapsible live traps. This would permit selective trapping in which immatures and others whose protection would be beneficial could be freed. It would also permit some control over the genetic quality of marten left in the forest.

MAMMALS--MUSTELIDS--Continued

Schultz, Vincent. STATUS OF THE SPOTTED SKUNK, COMMON SKUNK AND WOODCHUCK IN TENNESSEE. J. Tenn. Acad. Sci. 29(4): 305-314, maps. Oct. 1954. [Copies of this and other papers of Schultz's Tenn. fauna series should be requested from Tenn. Game Comm. rather than from author.]

Based on data from survey of farmers, conservation officers, and others. Range of Spilogale putorius seems to be all of state "east of the eastern Highland Rim, the southern and western Highland Rim and slightly westward of the West Tennessee River, with the primary range being the Cumberland Plateau and Unaka Range." Mephitis mephitis occurs throughout state but is relatively scarce in w. Tenn. and in mountainous portions of e. Tenn. (Unaka Range and Cumberland Plateau). The same applies to Marmota monax, except that woodchuck is common in Mississippi bluffs of nw. Tenn. Both common skunk and woodchuck are especially scarce in sw. Tenn., which is the state's best quail range.

Stains, Howard J., and Robert L. Packard. (U. Kans.) OCCURRENCE OF THE MINK, WEST OF THE HUNDREDTH MERIDIAN, IN KANSAS. Trans. Kans. Acad. Sci. 58 (2): 222-224, map. 1955.

Mink have been considered rare in w. Kans., but many records of their presence are given here. "From the above observations, it seems that mink are not scarce west of the hundredth meridian in Kansas, and are, in fact, well-distributed in certain northern localities and, where permanent streams are found, in the southern part of Kansas."

Wright, Philip L., and Robert Rausch. (Mont. St. U.) REPRODUCTION IN THE WOLVERINE, GULO GULO. J. Mamm. 36(3): 346-355, illus. Aug. 1955.

Reproductive tracts of 22 male and 11 female wolverines from Alaska were studied histologically. Adult females taken Oct.-Jan. contained unimplanted blastocysts and inactive corpora lutea. Blastocysts are described. "A late-January and an early-February specimen had implanted embryos of 22 and 68 mm. crown-rump length respectively. Two early-April specimens were lactating but not pregnant. Four females were immature. The wolverine has a long period of gestation like many of the other mustelids. The breeding season is not precisely known but it probably occurs in mid-summer. The baculum...is described. Immature males may be distinguished from adult males by their smaller bacula. The testes of males of both ages were largely inactive during the winter... Full sexual activity was seen in only one male taken in early April. The skull... matures rapidly, but the young during the first year tend to show open sutures in the facial and zygomatic regions. The sagittal crests of first year animals do not extend as far posteriorly as do those of adults."

MAMMALS--DOGS, WOLVES, FOXES

Cates, E. C. (US F&WS.) A DILEMMA IN NATURE / COYOTES OR RODENTS. S. Dak. Cons. Digest 22(7): 5-6, 10. July 1955.

Evidence from various studies in West that coyotes do not control jack-rabbit and rodent populations, and that populations of these animals fluctuate independently of those of coyotes.

Martin, Edwin P., and George F. Sternberg. (Ft. Hays Kans. St. Coll.) SWIFT FOX AGAIN APPEARS ON WESTERN KANSAS PRAIRIE. Kans. Fish & Game 13(1): 5, illus. July 1955.

The swift fox was considered exterminated in state and almost extinct, but a specimen was shot in Gove Co., Kans. in Jan. 1955 and is now in museum of Ft. Hays Kans. St. Coll. Other individuals should be allowed to live, but any that are killed by accident should be sent to a college or museum.

MAMMALS--DOGS, WOLVES, FOXES--Continued

Scott, Thomas G. (Ill. Nat. Hist. Surv.) AN EVALUATION OF THE RED FOX. Ill. Nat. Hist. Surv. Div., Biol. Notes no. 35. 1-16 p., illus. July 1955.
Gives good, well documented reviews of red fox as predator, in relation to rabies outbreaks, ineffectiveness of bounties, and of economic importance of the various forms of fox hunting. Esthetic and fur values are discussed briefly. Author concludes that: 1. Fox is adaptable, sometimes too numerous for own good. 2. Predation on wild prey is seldom important. 3. Fox is important in rabies transmission, especially when populations are high. 4. Bounties for fox are wasteful and ineffective. 5. The fur value is unstable. 6. Esthetic worth deserves wider appreciation. 7. Fox hunting values are diverse and not fully exploited. Recommended are: 1. Increase of fox hunting and fox killing for sport. 2. Convince those who hate fox as a game-killer that more can be accomplished by habitat improvement than by fox-extermination campaigns. 3. Elimination of bounty. 4. More vaccination and quarantine of dogs and better control of fox populations by organized trapping where rabies is a problem. 5. More attention by game managers to the fox resource and to its adequate harvest.

MAMMALS--CATS

Curry-Lindahl, Kai. LONS (LYNX LYNX) HISTORIA OCH NUVARANDE FÖREKOMST I SVERIGE OCH ÖVRIGA EUROPA. Sveriges Natur (Göteborg) 1951, p. 122-162, illus. 1951. [From J. Mamm. 36(3).]

Duke, Kenneth L. (Duke U.) REPRODUCTION IN THE BOBCAT, LYNX RUFUS. (Abstract.) Anat. Rec. 120(3): 816-817. Nov. 1954. [From J. Mamm. 36(3).]

Robb, Dunbar. (Mo. Cons. Comm.) COUGAR IN MISSOURI. Mo. Cons. 16(7): 14, illus. July 1955.
Mo. game officials have concluded that at least half a dozen recent records are unquestionably sound.

MAMMALS--BIG GAME--GENERAL

Chilson, Ernest W. (Bar T Bar Ranch, Winslow, Ariz.) ECONOMIC ASPECTS OF LIVESTOCK-BIG GAME RELATIONSHIPS AS VIEWED BY A LIVESTOCK PRODUCER. J. Range Mgt. 8(4): 145-149. July 1955.
"A fair division of forage and browse between domestic livestock and big game, must take into account the following economic aspects:" 1. Ranchers have invested heavily in improvements on public and private lands. 2. Big game benefit from these improvements, sometimes to destructive extent. 3. Management and production of livestock are more efficient than those of game. 4. Livestock support a far larger industry than game animals do. 5. Livestock men pay grazing fees and head taxes that far surpass payments by hunters. 6. Control of big game numbers is inefficient and haphazard as compared with ranch operations. 7. Livestock utilize feed more efficiently per pound of animal than do game animals. 8. Increasing human population will demand more livestock products.

Young, Stanford. SURVEY AND EVALUATION OF BIG GAME EXCLOSURES IN UTAH. M. S. thesis, Utah St. Agr. Coll. 1955.--J. B. Low.

MAMMALS--HOOFED (Except deer)

Anonymous. WYOMING'S MOUNTAIN GOAT EXPERIMENT. Wyo. Wildl. 19(9): 10-13, illus. Sept. 1955.
Wyo. has imported 8 mountain goats from Mont. They are being kept in a 60-acre enclosure. It is hoped that they will multiply and can be planted in remote mountain country where their descendants will provide some hunting. The article goes on to give a good bit of natural history information on the species.

Beidleman, Richard G. (Colo. A & M Coll.) AN ALTITUDINAL RECORD FOR BISON IN NORTHERN COLORADO. J. Mamm. 36(3): 470-471. Aug. 1955.

MAMMALS--HOOFED (Except deer)--Continued

Bever, Wendell. (S. Dak. Dept. Game.) HISTORY OF ANTELOPE IN SOUTH DAKOTA. S. Dak. Cons. Digest 22(8): 2-3. Aug. 1955.
Includes table showing estimated numbers of bucks, does, and kids in each S. Dak. county that has more than scattered antelope. Total for state is about 17,000.

Bowman, Robert I. (Dept. Lands & Forests, Toronto, Ont.) AERIAL RECONNAISSANCE OF MOOSE IN SUMMER. J. Wildl. Mgt. 19(3): 382-387, illus. July 1955.
Tests were made on 2 tracts of cent. Ont., July 6-31, 1949. Main findings were: 1. The method gives a useful population index. 2. It is better to follow water courses than to fly parallel strips. 3. Optimum altitude on clear days was about 400 ft. 4. Moose were most often observed in shallow lakes. 5. Useful signs of moose presence are muddy water, circular ripples, trails on lake bottom, color contrast, and shadow. 6. Antlers usually make recognition of sex possible from air. Factors affecting numbers of moose present in water areas are discussed. Costs of survey are itemized; they are considered justifiable for the results obtained.

Chatelain, Edward F. (US F&WS, Anchorage, Alaska.) DISTRIBUTION AND ABUNDANCE OF MOOSE IN ALASKA. Sci. in Alaska 1952. Proc. 3d Alaskan Sci. Conf., Alaska Div. A.A.A.S., p. 134-136. Published at College, Alaska, Sept. 1954.
Distribution is discussed in good detail. Abundance in each area is considered in a general, relative way.

Hancock, Norman V. A MANAGEMENT STUDY OF THE CACHE ELK HERD. M. S. thesis, Utah St. Agr. Coll. 1955.--J. B. Low.

Love, B. I. (Elk Is. Natl. Park, Alberta.) PERSONAL OBSERVATION IN THE CARE AND MANAGEMENT OF AN ELK (WAPITI) HERD AT ELK ISLAND NATIONAL PARK, ALBERTA, CANADA. Can. J. Comp. Med. & Vet. Sci. 19(6): 184-192, diagrams. June 1955.
Information on reproduction in nature is followed by an account of herd control that became necessary in the park. Much information is given on ways of trapping and shipping elk alive; this section should be highly instructive to anyone who has to do such work. While park population was still too high, considerable mortality was caused by very heavy tick infestations. Liver cysts of Taenia hydatigena were also weakening numbers of elk. Control of coyotes (final host of Taenia) and reduction of elk herd was followed by great reduction in incidence of tapeworm and tick infestations.

Reed, Erik K. (Natl. Park Serv., Santa Fe, N. M.) BISON BEYOND THE PECOS. Texas J. Sci. 7(2): 130-135. June 1955.
Past distribution of bison in sw. states and n. Mexico as determined from historical and paleontological records.

Schorger, A. W. (U. Wis.) THE ELK IN EARLY WISCONSIN. Trans. Wis. Acad. Sci., Arts, & Letters 43: 5-23. Sept. 1954. [From J. Mamm. 36(3).]

Stilwell, Hart. OLD-WORLD HUNT IN TEXAS. Field & Stream 60(1): 68-69, 143-146, illus. May 1955.
The blackbuck, Antilope cervicapra, a spiral-horned true antelope from India, has taken hold on ranches of central Texas and may become an important game animal in the U. S. Wild ones are proving wary and sporting. "Hundreds have been bagged by hunters, and many hundreds, probably thousands, sold to ranchmen in many parts of Texas and to others in New Mexico, Arizona, Colorado, Kansas, California and other states as well as Mexico. No figures are available on the number of blackbuck in the nation today. There are probably 1,000 to 1,500 in Texas, however, and they are on the increase almost everywhere." Like pronghorns, they can jump fences but rarely do, so they can be kept where wanted without special fencing. One herd just about doubled in 2 years despite severe drought and competition with goats, sheep, and cattle. "'They breed so much and mature so fast they've got it all over a lot of other game animals,' Moss said. 'They breed twice a year, any old time of year, it seems, and a healthy

MAMMALS--HOOFED (Except deer)--Continued

doe usually has twins. The doe matures in two years. And they've learned to take advantage of cover in cold weather.'" Unlike most big game tried in Texas, blackbuck stands up well to screwworms and ticks. Axis deer also do well, but they jump fences. Blackbucks have the weakness of being unable to stand much cold unless they can get to food. The author feels that blackbucks and our native whitetail deer ordinarily would get along together because the blackbuck is almost exclusively a grazer.

MAMMALS--DEER

Browman, Ludvig G., and Howard S. Sears. (Mont. St. U.) ERYTHROCYTE VALUES, AND ALIMENTARY CANAL pH VALUES IN THE MULE DEER. J. Mamm. 36(3): 474-476. Aug. 1955.

Browman, Ludvig G., and Howard S. Sears. (Mont. St. U.) MULE DEER MILK. J. Mamm. 36(3): 473-474. Aug. 1955.
Reports partial analyses of 3 samples and provides comparable data on milk of 8 other kinds of ungulates.

Butcher, Rush. IS THERE A FALLOW IN YOUR FUTURE? W. Va. Cons. 19(6): 12-13, illus. Aug. 1955.
W. Va. is propagating Chinese white fallow deer and plans to stock them in the wild within a few years. Fallow deer are said to be more timid and cunning than whitetails, once they have been shot at. Their flesh is said to be the best of all venison. Their food habits are much like those of whitetails.

Cowan, I. McT., and A. J. Wood. (U. of B. C., Vancouver.) THE GROWTH RATE OF THE BLACK-TAILED DEER (ODOCOILEUS HEMIONUS COLUMBIANUS). J. Wildl. Mgt. 19 (3): 331-336, graph. July 1955.
Individual growth histories are presented for 11 fawns born in captivity and raised under conditions of theoretically ideal diet. Growth, expressed as instantaneous growth rate, falls into 3 phases. These reveal growth rates approximating 10%, 5% and 1.5% per day. The third phase begins at an approximate age of 100 days and weight of 55 lbs. and is believed to mark the onset of puberty.--Authors.

Cummings, Mel. (Ore. Game Comm.) BACKYARD BLACKTAILS. Ore. St. Game Comm. Bul. 10(9): 3-4, 7, illus. Sept. 1955.
Tells of damage blacktail deer are doing to crops and trees in w. Ore. These deer are underharvested; many local hunters go to e. Ore. after deer. Author tells of a number of good places to go for the local blacktails that are making the trouble.

Darrow, Robert W. (N. Y. Cons. Dept.) DEER HUNTING--THEN AND NOW. N. Y. St. Cons. 10(1): 19-23, illus. Aug.-Sept. 1955.
Eyewitness accounts of some now-illegal ways in which deer used to be hunted in N. Y. and discussion of history of deer status and hunting in N. Y.

Dasmann, Raymond F., and Richard D. Taber. (Humboldt St. Coll.) A COMPARISON OF FOUR DEER CENSUS METHODS. Calif. Fish & Game 41(3): 225-228. July 1955.
"The most useful census method in the Lake County [Calif.] area is the sample-area count. This requires the least time and effort, and produces results which agree with most of our other observations. This method, however, has limited application elsewhere, requiring as it does relatively open areas of hill or mountain country and a sedentary deer population. Two other census methods were of equal accuracy, the total deer count, and the Lincoln index. However, neither of these has widespread usefulness, requiring either a prolonged study of a small area or a number of marked deer in the population. The pellet-group census would have the widest application if its results could be relied upon. Our studies indicate that the defecation rate varies, and we... suggest values for the defecation rate which help eliminate discrepancies in our census figures. Such values, however, are only tentative. They require careful checking in future studies before they can be accepted without reservation."

MAMMALS--DEER--Continued

Davey, Stuart P. (Va. Comm. Game.) A REPORT ON THE GLADES DEER. Va. Wildl. 16(9): 5-7, 22, illus. Sept. 1955.

Technical results of 2-day antlerless deer season in Glades section of Wise and Scott counties, Va., 1954. The herd had not spread as expected, buck kill had increased slowly, overbrowsing was present locally, and 36% of adult bucks had spike antlers. As result of hunt it was found that deer weights were normal for the southern subspecies. Antler development was poor largely because of close cropping of adult bucks. Age classes indicated that there had been 60% harvest of bucks. Doe age classes indicated a fall fawn rearing success of 65 fawns per 100 does. "Ovary analysis showed that of each 100 doe deer of all age classes each fall, 60 conceive and have a reproductive potential of 80 fawns for an average of 1.33. Nearly 60 percent of the adult does were lactating. No indication of fawn breeding was found." This relatively low rate of reproduction is attributed to population pressures and/or nutritional deficiencies. The indicated level of productivity allows for only about 23% mortality of does annually if herd is not to dwindle.

Dunkeson, Robert L. (Mo. Cons. Comm.) DEER RANGE APPRAISAL FOR THE MISSOURI OZARKS. J. Wildl. Mgt. 19(3): 358-364, graph. July 1955.

Deer food habits were determined by year-long study of food preferences of a deer in a 90-acre enclosure. Then effects of browsing on preferred plants were appraised during 4 years on permanent transects in Ozark refuges. Green forbs were important throughout the year. Grasses, shrubs, fungi, fruits, seeds, and acorns were important seasonally. A number of common plants were consistently unpalatable or palatable for only a short time during the growing season. No plants were found to be satisfactory indicators of winter range condition. In winter, deer made little use of deciduous woody twigs and evergreens were low in palatability. Shrubs which were palatable for a long period during the growing season served as the best indicators of over-populated deer ranges. Such shrubs may be the best deer range indicator plants for other southern hardwood areas as well as the Ozarks.--R. L. Dunkeson.

Ferguson, Robert B. THE PELLET-GROUP COUNT METHOD OF CENSUSING MULE DEER IN UTAH. M. S. thesis, Utah St. Agr. Coll. 1955.--J. B. Low.

French, C. E., L. C. McEwen, N. D. Magruder, R. H. Ingram, and R. W. Swift. NUTRITIONAL REQUIREMENTS OF WHITE-TAILED DEER FOR GROWTH AND ANTLER DEVELOPMENT. Pa. St. U., Agr. Exp. Sta. Bul. 600. ii + 50 p., illus. July 1955. (Bul. 600P, issued simultaneously with Bul. 600, is an 8 p. illus. leaflet that "presents the practical and useful conclusions contained in...Bulletin 600." In other words, 600P is for those who are interested only in the results, and 600 is for those who want the detailed research report.)

Important study of male fawns reared to maturity in pens. Rations on which various deer were kept were full, half, and rations deficient in calcium, phosphorus, protein, sulfur or sulfur-amino acids. Other deer were fed similar diets supplemented with these nutrients. Growth performance indicated daily need of about 2 lbs. of good air-dry feed for 50-lb. deer, 3-4 lbs. for 100-lb. deer, and 5-6 lbs. for 150-lb. deer. Fresh browse would weigh about twice as much. Ration should be 13-16% protein. Requirement for calcium was over 0.09%; for phosphorus over 0.25%. Supplements of vitamins A and D, sulfur, and methionine were ineffective. Body growth took precedence over antler growth. Only deer on complete rations developed large antlers, but those on calcium and phosphorus supplements did fairly well. Seasonal changes in food consumption were extreme. After seasonal weight loss, adult bucks required 4-5 lbs. dry weight of good food daily for weight recovery. Deer that were changed from restricted to full diet in April benefited in size of body and antlers but did not equal controls. Those kept on diets low in energy, calcium, phosphorus, and protein weighed only half as much as controls and developed only thin spike antlers. The paper also gives valuable data on keeping deer in captivity and it has a bibliography of 67 titles on nutrition and antler development.

MAMMALS--DEER--Continued

Hall, Albert G., and F. F. Weight. (N. Y. Cons. Dept.) THE FOREST AND THE GAME. N. Y. St. Cons. 10(1): 30-31, illus. Aug.-Sept. 1955.
How dense stands of low-grade, pole-size timber were managed to provide greatly increased supplies of deer forage and better and more profitable timber growth. Basically, the management consists of selective thinning that results in tops and sprouts for deer and leaves trees favored for timber as well as any necessary nurse trees.

Julander, Odell. (Intermtn. Forest & Range Exp. Sta., Ogden, Utah.) DEER AND CATTLE RANGE RELATIONS IN UTAH. Forest Sci. 1(2): 130-139, map. June 1955.
Intensive, quantitative study of range condition and utilization on the Oak Creek range, where varying degrees of deer-cattle competition existed. Cattle grazed chiefly along canyon bottoms and gentle slopes; their distribution was influenced by steepness of slope and availability of water and forage. Deer utilized large areas cattle did not. Deer distribution depended on forage in summer; on forage, exposure, and cover in winter. Both animals heavily utilized about 1/5 of summer range and 1/3 of winter range. In summer, deer fed mainly on forbs and browse, while cattle relied mainly on grass if available. Most choice deer foods were used somewhat by cattle, but deer used little grass in summer. Browse was main deer food on winter range, but deer used grass heavily in early spring. "The principles illustrated for Oak Creek apply to all of the other areas studied, namely that: (a) Proper use of perennial grasses limits maximum cattle stocking, (b) proper use of forbs and browse palatable to deer limits maximum deer stocking, and (c) proper use of forbs and browse palatable to both kinds of animals limits maximum combined deer-cattle stocking."

Krefting, L. W., A. B. Erickson, and V. E. Gunvalson. (US F&WS, St. Paul, Minn.) RESULTS OF CONTROLLED DEER HUNTS ON THE TAMARAC NATIONAL WILDLIFE REFUGE. J. Wildl. Mgt. 19(3): 346-352, map. July 1955.
A fair number of white-tailed deer were on the 40,000 acre Tamarac Refuge in nw. Minn. when it was placed under rigid protection in 1937. This herd increased in typical irruptive form as a result of protection and by 1942 probably reached an av. of 30 deer per sq. mi. or about 2,000 on refuge. About 1/2 of refuge was open to hunting, 1951-53. 6,600 hunters bagged 1,587 deer for 24% success. Fawn productivity increased from 70 to 77 fawns per 100 does. After 3 years of hunting, adult sex ratio changed from 53 males per 100 females to 75 per 100. Fawns increased 13 and 14 lbs. after hunting began. Does first increased 4 lbs. and then decreased 3 lbs. Bucks stayed the same for 2 years and then decreased 11 lbs. Av. age of herd decreased by 1/2 yr. (3.3 to 2.8) and remained at 2.8 for 2 yrs. Representation of age classes in kill has been puzzling and inconsistent. Preferred browse plants such as sumac (Rhus spp.), bur oak (Quercus macrocarpa), and red osier dogwood (Cornus stolonifera) were reduced in abundance by excessive deer use. Hazelnut (Corylus spp.) a second rate browse plant, now furnishes about 1/2 the browse supply and in some areas it has been killed off. Residents of counties in the refuge area kill about 3/4 of the deer bagged each year.--L. W. Krefting.

Krefting, L. W., H. L. Hansen, and M. H. Stenlund. (US F&WS, U. Minn., St. Paul.) USE OF HERBICIDES IN INDUCING REGROWTH OF MOUNTAIN MAPLE FOR DEER BROWSE. U. Minn., Minn. Forestry Notes no. 42. 2 p. July 1955.
Top kill and vigorous regrowth of tall Acer spicatum was desired. Butoxy ethanol esters of 2,4-D and 2,4,5-T were tried at concentrations of 4, 8 and 12 lbs. acid equivalent per 100 gals. diesel oil. Oil alone and scorching with propane torch were also tried. Results are reported in detail. "In order to effectively kill back overgrown stems of mountain maple and greatly increase the amount of regrowth available for deer browse, it is recommended that 2,4-D in the ester form be applied at breast height to the stems at a concentration of not less than 12 pounds of acid equivalent per 100 gallons of oil during the early bud swelling stage. This type of treatment has been found to be quickly and easily applied and the resultant browse is readily eaten by deer."

MAMMALS--DEER--Continued

New York. WINTER DEER KILL, 1954-55. N. Y. St. Cons. 10(1): 39. Aug.-Sept. 1955.
Starvation loss per sq. mi. is tabulated for Adirondack deer yards for 16 years, 1939-1955. It varied from 0 to 22.2 in this period. In 1954-55 it was 6.8, which was considered remarkably low under the prevailing circumstances of high population, low food supply, deep snow, and unusual cold. The saving feature was a weather vagary in late Feb. that produced a strong crust over which deer easily traveled and fed outside usual yards. Starvation losses were minimal in specific areas where herds had been lowered by an experimental two-deer season.

Packard, Robert L. (U. Kans.) RELEASE, DISPERSAL, AND REPRODUCTION OF FALLOW DEER IN NEBRASKA. J. Mamm. 36(3): 471-473, map. Aug. 1955.
In the late 1930's about 60 white fallow deer (Dama dama) were released 10 mi. nw. of Petersburg, Nebr. They have reproduced, have spread, and have been seen in 5 counties of east central Nebr. Records are summarized and mapped. A courtship and mating are described.

Pasto, Jerome K., and D. Woods Thomas. DEER ECONOMICS. Pa. St. U., Coll. Agr. Ext. Serv. 1-29 p., illus. [1955.]
Attractive pamphlet on deer economics and public attitudes toward deer in Potter and Monroe counties, Pa. It is a popular report on a scientific study of the situation. It was originally published in 5 parts in Pa. Game News and each part was abstracted in WR as follows: 1 and 2 in WR 78: 49. 3 and 4 in WR 79: 31-32. 5 in WR 80: 28.

Ramsey, Bob. (Texas Game Comm.) TEXAS HOLDS SECOND ANTLERLESS DEER HUNT. Texas Game & Fish 13(8): 2-3, 26-27, illus. Aug. 1955.
"A total of 3,329 antlerless deer were killed during Texas' second legal 'doe' season December 1-15, 1954. These were part of an estimated 9,000 surplus deer, which created an overpopulation problem in Mason, Llano, and Gillespie Counties." Not only was the hunt beneficial to the herd, but it was profitable to landowners. Results and economics of the hunt are discussed in some detail.

Switzenberg, D. F., Thomas C. Nelson, and B. C. Jenkins. (Mich. Dept. Cons.) EFFECT OF DEER BROWSING ON QUALITY OF HARDWOOD TIMBER IN NORTHERN MICHIGAN. Forest Sci. 1(1): 61-67, illus. Mar. 1955.
Study was made of an Upper Mich. stand that had been browsed severely when young. It was found that satisfactory stocking of sugar maple had occurred despite extreme browsing. Heart rot was only about 10% commoner than in the control area. Crook was about 26% more than in control area, but most of this would be outgrown. Catfaces were small and not very numerous in either area; they were considered economically insignificant. Growth was somewhat retarded, but it is thought that the monetary loss would not be great over a long period of time. "The study strongly indicates that overbrowsing of hardwood types by deer may not be as serious as many have claimed..."

MAMMALS--MARINE

Hewer, H. R. (Imperial Coll. Sci. & Tech., Eng.) NOTES ON THE MARKING OF ATLANTIC SEALS IN PEMBROKESHIRE. Proc. Zool. Soc. London 125(1): 87-93, 6 figs. May 1955.
Summary: "The requirements for marking Seals are considered and a method is described for applying rings to the fifth digit of the pes in the Atlantic Seal, by using special pliers. The results of marking 176 Seals in 1952-3-4, on the Pembrokeshire coast, are given and show that, during the first six months of the first year, moulters move as far north as Anglesey, west as far as the Wexford coast of Eire, and south to Cornwall and Brittany, as well as eastward up the Bristol Channel."

MAMMALS--MARINE--Continued

Sivertsen, Erling. A SURVEY OF THE EARED SEALS (FAMILY OTARIIDAE) WITH REMARKS ON THE ANTARCTIC SEALS COLLECTED BY M/K "NORVEGIA" IN 1928-29. Det Norske Videnskaps-Akademi i Oslo, Scientific Results of the Norwegian Antarctic Expeditions 1927-1928 etc. no. 36. 1-76 p., illus. + 10 plates. 1954.

Taxonomic revision of all genera and species of Otariidae; based on material in several major museums of world. Skull measurements of adult males are dealt with in detail. Age determination by skull sutures is considered at length. The "Remarks on the Antarctic seals..." is limited to measurements and collection data except that a few pages of life history data are given for Kerguelen fur seal.

BIRDS--GENERAL

Axtell, Harold H. (Buffalo Mus. Sci., Buffalo 11, N. Y.) AUTHORITIES MAKE TOO MANY MISTAKES. Kingbird 5(2): 37-39. July 1955.

A wonderful article, jammed with marvelous anecdotes about the fallibility of expert field ornithologists: how they mistake redpolls for crows, black ducks for swans, gnats and airplanes for given species of hawks, and how whole groups of experts split right down the middle on identifications. But doesn't reliability increase with number of expert observers? Maybe, but Axtell shows that groups of authorities can be just as wrong as individuals, and often are.

Gurr, L. (Massey Agr. Coll., Palmerston North, N. Z.) A PNEUMATIC NEST-RECORDING DEVICE. Ibis 97(3): 584-586, illus. July 1955.

A tambour fitted into bottom of nest is connected by rubber tubing to a tambour that records on a kymograph. No battery or other power source is needed. This device not only records movements to and from nest, it also records activity of varying intensity on nest.

Löhrl, Hans. POSSIBILITIES AND LIMITS OF BIRD PROTECTION AS A NATURAL PEST CONTROL MEASURE IN FRUIT CULTURE. Ornith. Mitteilungen 6(6/7): 126-129. 1954. [From review by R. O. Bender, Bird-Banding 26(1).]

In German. "After discussing the effect of various chemical pest control measures on bird populations and concluding that these have no effect (in Germany), the author examines the possible usefulness of birds in controlling insect pests. He concludes that in most situations they are insufficient and other measures should be used." A population study of birds of an 11.25 ha. orchard was made with aid of 500 nest boxes and is reported here. Food supply and other factors are considered. Bender gives more details.

Rydzewski, W., editor and publisher. THE RING. 1 Altyre Rd., Croydon, Surrey, Eng. No. 1, 1-16 p., Oct. 1954, 3s. No. 2, 17-36 p., Feb. 1955, 4s. No. 3, 37-56 p., May 1955, 4s. No. 4, 57-78 p., Aug. 1955, 4s. All processed, 6-1/2 x 8-1/2 in.

This new bird journal is devoted entirely to banding. It contains explanations of ringing systems of different organizations, tells how their record cards are used, proposes standardization of procedures, gives news of bird banding in many parts of the world, appeals for data on bands of unknown origin, lists literature pertaining to banding and its results, and generally serves as an international clearing house for banding information. "Generally speaking all the problems concerning ringing, trapping, colour ringing, publishing, etc., either theoretical or practical ones, will find their place in 'THE RING.' It will include information about new schemes and stations, the full list of recent publications, information on non-ornithological rings, etc."

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Baldini, J. T., R. E. Roberts, and C. M. Kirkpatrick. (Stine Lab., du Pont Co., Newark, Del.) THE REPRODUCTIVE CAPACITY OF BOBWHITE QUAIL UNDER LIGHT STIMULATION. Poultry Sci. 33(6): 1282-1283. Nov. 1954.

Record of egg production under optimal experimental conditions.

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION--Continued

Brewer, Richard. (So. Ill. U.) SIZE OF HOME RANGE IN EIGHT BIRD SPECIES IN A SOUTHERN ILLINOIS SWAMP-THICKET. Wilson Bul. 67(2): 140-141. June 1955.
Summer activity areas of 29 pairs of small birds averaged from about a quarter acre to a half acre for the 8 species.

Bruns, Herbert. STUDIES ON THE SELECTIVE CHOICE OF FOOD BY BIRDS. Ornith. Mitteilungen 6(6/7): 130-133. 1954. [From informative review by R. O. Bender, Bird-Banding 26(1).]
In German. Three species of captive titmice were tested for factors that affected food selection: location, mass, size, form, brightness, color, contrast, and protective coloration. Bender mentions some of the results, and says: "This stimulating paper should provide many ideas for research..."

Forster, G. H. THERMAL AIR CURRENTS AND THEIR USE IN BIRD-FLIGHT. Brit. Birds 48(6): 241-253, illus. June 1955.
An easily understood explanation of thermals and how they are used by birds both in soaring and in migration. Some new ideas are advanced.

Griffin, Donald R., and Timothy H. Goldsmith. (Harvard U.) INITIAL FLIGHT DIRECTIONS OF HOMING BIRDS. Biol. Bul. 108(3): 264-276, graphs & maps. June 1955.
Leach's petrels and common terns were released in unknown, inland areas. Cross bearings were taken on flight directions for as long as possible. "The petrels exhibited no consistent headings toward home or in any other direction, but one experiment resulted in returns from an inland release point similar in speed to those reported earlier from releases at sea or along the coast." Terns tended to fly se. when sun was visible, not when sun was entirely hidden by clouds. This tendency probably is based upon some form of sun navigation. "It may be a useful ability for terns that nest along the eastern coast of the United States, since whenever they find themselves inland, flight to the southeast will bring them quickly back to the coast."

Hartman, Frank A. (Ohio St. U.) HEART WEIGHT IN BIRDS. Condor 57(4): 221-238, graph. July 1955.
Percentage heart weights for more than 1340 birds distributed among 291 species and 64 families are tabulated and graphed. Birds were collected in e. U. S. and Panama. Results are discussed in connection with taxonomic groups, sex, age, activity, season, climate, altitude, and comparisons with mammals.

Hoffmann, K. VERSUCHE ZU DER IM RICHTUNGSFINDEN DER VÖGEL ENTHALTENEN ZEITSCHATZUNG. Z. Tierpsychol. 11: 453-475. 1954. [Copy of review by D. W. S., Ibis 97(3).]
"Experimental alteration of the 'internal clock' of Starlings trained to orientate by the sun to fixed compass directions. By experimentally advancing or retarding the birds' 'day' by six hours, they orientated 90° to the left or to the right of the original direction. By experimentally altering the altitude and path of the artificial sun it was found that orientation was not affected: the direction was taken entirely from the sun's azimuth. The significance of these and other results is discussed."

Kirkpatrick, Charles M. (Purdue U.) FACTORS IN PHOTOPERIODISM OF BOBWHITE QUAIL. Physiol. Zool. 28(3): 255-264, graphs. July 1955.
"Experiments...to investigate the quantitative effects in reproductive responses to length of the dark-period interruption, to variations in light intensity of dark-period interruption, and to variations in light intensity in a single long-day exposure are described."

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION--Continued

Kramer, Gustav, and Ursula von Saint-Paul. THE HOMING ABILITY OF CAGED CARRIER PIGEONS. Der Ornith. Beobachter 51(1/2): 4-12. 1954. [Copy of review by R. O. Bender, Bird-Banding 26(1).]

In German. "Eighteen carrier pigeons were kept caged to prevent their acquiring visual or sensory familiarity with their home by any means which required free movement about the area. Ten other pigeons of the same age (9-10 months) which were permitted free flight about the home area but which received no special homing training were used as controls. All of the birds were transported 320 km. south in covered cages so that they could not see the sky or the countryside. From the similarity of their behavior upon release, presented in full detail, the authors conclude that homing ability is not dependent on extensive familiarity with the home environment acquired by movement about the area. This in turn supports the sun navigation theory of homing, although this requires sensory qualities not proved to be possessed by birds. This work is a very valuable contribution."

Miller, Alden H. (U. Calif., Berkeley.) THE EXPRESSION OF INNATE REPRODUCTIVE RHYTHM UNDER CONDITIONS OF WINTER LIGHTING. Auk 72(3): 260-264, graph. July 1955.

Norris, Robert A., and F. S. L. Williamson. (Rutgers U.) VARIATION IN RELATIVE HEART SIZE OF CERTAIN PASSERINES WITH INCREASE IN ALTITUDE. Wilson Bul. 67(2): 78-83, graph. June 1955.

Sibley, Charles G. (Cornell U.) BEHAVIORAL MIMICRY IN THE TITMICE (PARIDAE) AND CERTAIN OTHER BIRDS. Wilson Bul. 67(2): 128-132. June 1955.

Evidence is given that titmice, chickadees, and other parids behave in such a way as to mimic hissing, threatening snakes when disturbed in their tree holes. This behavior startles people and might well frighten off potential enemies.

Stegeman, LeRoy C. (Coll. Forestry, St. U. of N. Y., Syracuse 10.) WEIGHTS OF SOME SMALL BIRDS IN CENTRAL NEW YORK. Bird-Banding 26(1): 19-27. Jan. 1955.

Based on about 2500 weights of individuals of several species. Discussed in some detail are: differences between sexes, between living and dead birds, between insectivorous and seed-eating birds, seasonal and diel variations, extent of variation in relation to size of bird.

BIRD--MANUALS, FAUNAS, COMMUNITIES

Coulter, Malcolm W., and Howard L. Mendall. (U. Maine.) GAME BIRDS OF MAINE. U. Maine, Agr. Ext. Serv., Bul. 443. 1-37 p., illus. June 1955.

This pamphlet is a popular handbook of the game birds of Maine. Both upland and waterfowl species are discussed. Each well known or important species is treated under the headings Local Names, Description, Range, Distribution and Habitat in Maine, Courtship and Nesting, Food, and Remarks. Photographs of most species are included. Species that are unimportant in Maine are treated briefly. For technical workers, the greatest value of this pamphlet will be in its summary of data on distribution, status, and ecology of game bird species in the state.

Cowan, Ian McTaggart. BIRDS OF JASPER NATIONAL PARK, ALBERTA, CANADA. Can. Wildl. Serv., Wildl. Mgt. Bul., ser. 2, no. 8. ii + 67 p., illus. June 1955.

Discusses physiography, faunal areas, and faunal position of this huge park ("the largest accessible primeval wildlife sanctuary on this continent") and presents an annotated list that gives information on status of 195 species of birds. Data on breeding are given where known for park.

BIRDS—MANUALS, FAUNAS, COMMUNITIES—Continued

Dementiev, G. P., and N. A. Gladkov, eds. THE BIRDS OF THE SOVIET UNION. State Publishers "Soviet Science" (Moscow). Six vols. 1951-54. [From review by D. D. Harber, Brit. Birds 48(5). James Fisher has provided another long, good review in Ibis 97(3).]

In Russian. Each of the 6 volumes contains from 480-803 pages. The set is especially strong on distributional data but also has much on biology and taxonomy. This set of volumes will be important in ascertaining the distribution, status, and habits of Eurasian representatives of American birds. Harber provides a long general review of the series, pointing out both weak and strong features, and he has begun to provide long, informative discussions of each volume. The first 2 parts appeared in British Birds for May and June, 1955.

Murray, J. J. (6 White St., Lexington, Va.) SECOND REVISION OF THE VIRGINIA 1952 'CHECK-LIST.' Raven 26(6/7): 75-97. June-July 1955.

A detailed, species-by-species supplement to the Va. bird list (see WR 68: 25). The first supplement was listed in WR 74: 29.

Tugarinov, A. J., and L. A. Portenko. ATLAS OF THE GAME BIRDS AND MAMMALS OF THE U.S.S.R. Vol. 1: BIRDS. Acad. Sci. U.S.S.R. (Moscow). 370 p., 66 color plates. 1952. 100 Rubels. [Copy of notice by F. J. Turček, Ibis 97(3).]

"After a general introduction by Portenko the bird species of the whole U.S.S.R. are dealt with, with descriptions and information on distribution, subspecies, ecology, economic importance and methods of hunting. There is also a chapter on ornithological methods. Most of the plates are in colour and the photographs are excellent."

BIRDS--NUMBERS AND NUMBER FLUCTUATIONS

Callahan, Philip S., and Howard Young. (Kans. St. U., Manhattan.) OBSERVATIONS ON THE AVIFAUNA OF AN OZARK PLATEAU. Auk 72(3): 267-278, map. July 1955.

Faunistic and population study of hilly, wooded tract of 2 sq. mi.

Kolb, Haven. WINTER BIRD POPULATION STUDY. Aud. Field Notes 9(3): 290-311. June 1955.

Forty-four actual population studies of winter birds of plots scattered from Fla. and Maine to Calif. and B. C. These winter population studies are roughly equivalent to the breeding bird censuses and should not be confused with the Christmas Census, which is generally acknowledged to be a sporting enterprise.

Lehmann, W. POPULATION DENSITY STUDIES IN CONIFEROUS FORESTS. Ornith. Mitteilungen 5(9): 161-163. 1953. [Copy of review by R. O. Bender, Bird-Banding 26(1).]

In German. "The presence of managed forests in Europe with uniform stands of trees of one age and species affords an opportunity for unusual population density studies. This paper describes the results of one such study. A tract of 150-year old beech forest which occupies land just below the altitude of the conifers had only 0.5 pair of birds per hectare while a 25-year old stand 4.5 m. in height had a density of 1.1 pr./ha. Much higher densities have been reported from deciduous forests of the lowlands of northwest Germany. The introduction of conifers increased the population density so that a mixed forest of 150-200-year old trees had a density of 0.8 pr./ha. In uniform coniferous forests the density was somewhat higher; 1 pr./ha. As all trunks containing cavities were removed from these managed forests, hole-nesting birds were absent, accounting in part for the low densities. The Chaffinch was the most abundant species in all types of forest. The methods employed in obtaining these figures is not stated."

BIRDS--CONTROL, MORTALITY

Mann, W. F., Jr., and H. J. Derr. (So. Forest Exp. Sta., New Orleans 13, La.) NOT FOR THE BIRDS. Forests & People (Alexandria, La.) 5(3): 32-33, illus. 3d Quarter 1955.

Report on promising bird repellent, Morkit, which consists of anthraquinone and inert ingredients. It is manufactured in Germany specifically as a bird repellent. It has no distinctive taste or odor and its mode of action is unknown. It is not known to be harmful to livestock, wildlife, or people. It did not kill birds in the tests. But it did protect longleaf pine seed from birds in field tests, thereby making direct seeding of this species practical for the first time. Rodents and rabbits were not repelled by it. Longleaf pine seed can be coated with Morkit for 15 cents a pound. This cost includes all labor and materials, including the asphalt sticker. The paper provides details of tests, costs, and method of application.

BIRDS--PARASITES AND DISEASES

Owen, D. F., and J. S. Ash. (Ed. Gray Inst., Oxford, Eng.) ADDITIONAL RECORDS OF PROTOCALLIPHORA (DIPTERA) IN BIRDS' NESTS. Brit. Birds 48(5): 225-229. May 1955.

Summary: "1. Further records are given of the occurrence of parasitic dipterous flies, Protocalliphora, in the nests of 15 species of birds in Britain, nine of which appear to be new host records. 2. The additional information again suggests that hole-nesters are more heavily infested than species using open sites, and also that mortality among the nestlings due to the presence of this fly is exceptional."

BIRDS--QUAIL

Dale, Fred H. (Patuxent Refuge, Laurel, Md.) ABILITY OF THE BOBWHITE TO GROW AND REPRODUCE WITHOUT A DIETARY SOURCE OF VITAMIN B_{12}. Science 121(3149): 675-676. May 6, 1955.

Einarsen, Arthur S. (Ore. St. Coll.) OBSERVATIONS ON QUAIL BEHAVIOR. Murrelet 36(2): 18-21. May-Aug. 1955.

Several Oregon examples are given of bobwhite, California, or mountain quail showing considerable fidelity to given areas or to members of their own species, and of their changing covey ranges only slowly and slightly as circumstances demanded. Natural or transplanted stocks of these birds do not disperse over suitable habitats as do some game birds. Mountain quail may thrive and provide good hunting on newly burned or logged areas, but often fail to occupy them much before they pass out of a suitable successional stage. Author recommends stocking such areas promptly with live-trapped or pen-reared mountain quail.

Gresham, Claude H., Jr. QUAIL IN LOUISIANA. La. Cons. 7(9): 2-6, illus. July-Aug. 1955.

Good factual exposition of why quail stocking was a waste of money; also discussion of what should be done to have more quail. Many thousands of pen-reared quail were banded and released in La. Returns totaled slightly more than half of 1%. Each bird cost about $2, so each quail for which a band was returned cost about $400. Allowance for bands not turned in would not change the general picture. Comparable figures from other states are cited. A 6-year study of survival of stocked quail in La. is discussed. It demonstrated that "Thirty days after their release only 65% of the birds were alive. At the end of sixty days, only 37.9%; after 90 days, 19.8%; after 120 days, 12%; after 150 days, 5.9%, and after six months, only 2.7%." These losses were attributed not so much to predation and hunting as to starvation, inability of birds to adjust to wild, and lack of carrying capacity in habitat. The releases did not raise population levels, except briefly. Habitat conditions for quail have deteriorated greatly in La. The best thing today's hunter can do to have quail is to work with landowners to get strips or patches of cover and food protected or created. The currently accepted ways of doing this are described briefly.

BIRDS--QUAIL--Continued

Keefe, Jim. (Mo. Cons. Comm.) COTURNIX QUAIL--A NEW MISSOURI GAME BIRD? Mo. Cons. 16(7): 12-13, illus. July 1955.
Coturnix c. japonica, a small nonmigratory quail from Japan, has been imported into Mo. for propagation and eventual release. This article gives much information about habits of the bird. Its food habits are beneficial, it holds well to dogs, requires little cover, usually has 2 broods of about 6 young each per year, thrives despite predators, and provides sporty wing shooting. Biologists hope it will succeed in Mo. farmland where a good huntable species is much desired.

Legler, Eugene. (Tenn. Game Comm.) QUAIL WING ROUND-UP GIVES VALUABLE DATA. Tenn. Cons. 21(8): 17. Aug. 1955.
Tables show age groups in 1954-55; age ratios, 1951-55; and age groups in first 4 days of season, 1951-55. "To summarize: For the past four years in Tennessee, 76 percent of the quail wings examined were taken from juvenile birds while 79 percent of the birds examined during the first four days of the season fell in the juvenile classification. This 3 percent difference seems to indicate that the earlier the birds can be hunted the better reward to the hunter. An earlier open season might provide much better shooting and would permit more of the juvenile birds to be killed..."

Lowe, Charles H., Jr. (U. Ariz.) GAMBEL QUAIL AND WATER SUPPLY ON TIBURÓN ISLAND, SONORA, MEXICO. Condor 57(4): 244. July-Aug. 1955.
All available evidence indicates that "It is beyond reasonable doubt that the Gambel Quail occurring on Tiburón Island do not require free surface water of any kind for their successful maintenance during the dry periods of the year."

Parmalee, Paul W. (Ill. St. Mus., Springfield.) NOTES ON THE WINTER FOODS OF BOBWHITES IN NORTH-CENTRAL TEXAS. Texas J. Sci. 7(2): 189-195. June 1955.
Quantitative report on and discussion of foods found in 124 crops taken from quail shot Dec. 1 through Jan. 16 in Haskell, Throckmorton, and Shackelford counties.

Schrader, Walter. (S. C. Wildl. Resources Dept.) QUAIL CROP STUDY REVEALING FOOD HABITS. S. C. Wildl. 2(3): 4, 21, illus. Summer 1955.
Crops of 79 quail from Belmont Game Mgt. Area, S. C., were collected Nov.-Feb. 1954-55. Graphs show results for each month. Lespedeza bicolor, which was very abundant on the area, was most important food each of the 4 months. Its representation varied from 37% to 61%.

BIRDS--PHEASANTS

Dale, Fred H. THE ROLE OF CALCIUM IN REPRODUCTION OF THE RING-NECKED PHEASANT. J. Wildl. Mgt. 19(3): 325-330. July 1955.
Distribution of pheasants in Lancaster Co., Pa. was studied in relation to availability of limestone in surface soils. Despite similarities in land use, pheasants were abundant on calcareous soils and almost non-existent on soils from granitic rocks. Pheasants were tested over 2 years on diets differing principally in kind of grit. Birds receiving limestone grit produced approximately 10 times as many eggs as those on a similar diet but with granite grit. Eggs were developed on all diets, but ovulation appeared inhibited when calcium level was low. It is suggested that failure of pheasants in many parts of ne. U. S. may be a result of calcium deficiency.--F. H. Dale.

Edwards, William R. (Ohio Div. Wildl.) OHIO CAN HAVE A LONGER PHEASANT SEASON. Ohio Cons. Bul. 19(9): 12-13, 27, illus. Sept. 1955.
Evidence from Ohio and other states that a longer season on cocks would not hurt the pheasant population but would be helpful to hunters.

Greeley, Frederick. THE RELATIONSHIP OF NATURAL AND ARTIFICIAL STRESSES TO THE FUNCTION OF THE ENDOCRINE GLANDS IN RING NECKED PHEASANTS AND DOMESTIC FOWL. Ph.D. thesis, U. Wis. Jan. 1954. [From long abstract in Summaries of Doctoral Dissertations, U. Wis., vol. 15: 186-188. 1955.]

BIRDS--PHEASANTS--Continued

Lassen, Robert W., Kenneth E. Doty, and Ruel D. Saucerman. (Calif. Dept. Game.) SEXING DAY-OLD RING-NECKED PHEASANT CHICKS BY A COLOR CHARACTERISTIC. Calif. Fish & Game 41(3): 229-231, illus. July 1955.
Proper use of markings around the eye makes it possible to ascertain sex rapidly and with better than 90% accuracy. The markings and some of their variations are well illustrated.

Nelson, Lee K. (Ky. Dept. Wildl. Resources.) A PHEASANT NECK TAG. J. Wildl. Mgt. 19(3): 414-415, illus. July 1955.
Colored, numbered koroseal tags were used on 7,717 pen-reared pheasants released from 1950-53. They were attached by rust-proof safety pins to back of neck. Tags proved useful for identification of dead birds, and for identification in field observations. One tag was known to have been retained for 392 days.--L. K. Nelson.

Nelson, Lee K. (Ky. Dept. Wildl. Resources.) PROGRESS REPORT ON STOCKING OF PHEASANTS ON KENTUCKY PLOTS IS GIVEN. Ky. Happy Hunting Ground 11(4): 5, 25, illus. July 1955.
Thousands of pheasants have been stocked on study areas in Ky. This paper tells what is known of their mortality, dispersal, and reproduction. See also WR 79: 42.

Stewart, Paul A. (Ohio St. U.) AN AUDIBILITY CURVE FOR TWO RING-NECKED PHEASANTS. Ohio J. Sci. 55(2): 122-125, graph. Mar. 1955.
Summary: "A shock avoidance technique was used to test the auditory acuity of two ring-necked pheasants. An audibility curve is presented for these birds. It was not possible, with the available equipment, to generate harmonic-free tones below 120 cycles per second, and the lower auditory threshold could not be determined. The upper auditory threshold was established at 10,500 cycles per second at an intensity of 19 decibels above the average background noise."

Stewart, Paul A., and Eugene H. Dustman. (Ohio St. U.) THE USE OF AUDITORY STIMULI FOR FLUSHING RING-NECKED PHEASANTS. J. Wildl. Mgt. 19(3): 403-405. July 1955.
An attempt was made to find a sound which might have value for flushing incubating ring-necked pheasants from their nests ahead of the mowing machine. Observations were made from concealment of the responses of incubating birds while various sounds were being presented with an Ekotape recording machine and a Grason-Stadler audio oscillator. The distress squeal of a hen pheasant and the squeal of a weasel were some of the sounds presented. No sound was found which was suspected of having value for flushing incubating pheasants ahead of the mowing machine.--P. A. Stewart.

BIRDS--GROUSE, PARTRIDGE, ETC.

Beer, James R. (U. Minn.) SOME GROSS MORPHOLOGY OF THE BLUE GROUSE DIGESTIVE TRACT. Murrelet 36(2): 22-25, graphs. May-Aug. 1955.
Summary: "The digestive tract of the blue grouse is relatively long for a gallinaceous bird, giving a large absorptive area. This appears to be correlated with the type of food eaten by the adults. The length of the intestine is correlated with the size of the bird during the developmental period but does not correlate with the shifts in diet which are made during this time. The relative proportions of the several parts remain constant throughout the life of the bird."

Haugen, Arnold O. (Ala. Poly. Inst.) HUNGARIAN PARTRIDGE POPULATION ON A 60-ACRE AREA AT PULLMAN, WASHINGTON. Murrelet 36(1): 9-10, map. Jan.-Apr. 1955. [Sept.]
Population data were secured on a farm during population high of 1935. Coveys seen Oct. 5-Nov. 3 varied from 4 to 7. Estimated number of partridge per 100 acres varied from 82 to 168. These figures are exceptionally high and may represent some concentration because of hunting and farm operations.

BIRDS--GROUSE, PARTRIDGE, ETC.--Continued

Heggen, Albert W. FACTORS AFFECTING CHUKAR PARTRIDGE PRODUCTION UNDER GAME FARM CONDITIONS. M. S. thesis, Utah St. Agr. Coll. 1955.--J. B. Low.

Jollie, M. (U. Idaho.) A HYBRID BETWEEN THE SPRUCE GROUSE AND THE BLUE GROUSE. Condor 57(4): 213-215, illus. July-Aug. 1955.

Marples, B. J., and L. Gurr. (U. of Otago, N. Z.) THE CHUKOR IN NEW ZEALAND. Emu 53(4): 283-291, map. Dec. 1953.
Result of questionnaire. Data are given on introductions of A. graeca chukar, present distribution, habitat, breeding, coveys, foods, mortality factors. The birds are found chiefly high up on warm sunny surfaces of the hills of South Island. Reports differ as to tolerance of snow conditions. Breeding apparently occurs Sept.-Jan. Usual number of eggs per clutch seems to be about 15, with variation at least from 8 to 18. Coveys in fall seem to be family groups. Large coveys of 50-150 birds are seen in winter. Grass seeds and green grass are foods reported most often. Relatively few of these birds are shot because their habitat is too high and difficult for hunters to reach.

Phelps, John E. THE ADAPTABILITY OF THE TURKISH CHUKAR PARTRIDGE (ALECTORIS GRAECA (MEISNER)) IN CENTRAL UTAH. M. S. thesis, Utah St. Agr. Coll. 1955.--J. B. Low.

BIRDS--TURKEY

Bailey, R. Wayne. (W. Va. Cons. Comm.) NOTES ON ALBINISM IN THE EASTERN WILD TURKEY. J. Wildl. Mgt. 19(3): 408. July 1955.
Reliable information was received on 8 albino and partially albino wild turkeys in W. Va. during years 1952-53. One of these was taken by a hunter.--R. W. Bailey.

Bailey, R. Wayne. (W. Va. Cons. Comm.) TWO RECORDS OF TURKEY BROOD SURVIVAL AFTER DEATH OF THE HEN. J. Wildl. Mgt. 19(3): 408-409. July 1955.
Repeated observations were made throughout summer and fall of 1953 of 2 wild turkey broods that survived and grew normally after mother hens had been killed in early July.--R. W. Bailey.

Bailey, Wayne. (W. Va. Cons. Comm.) WILD TURKEYS ARE "TOUGH." W. Va. Cons. 19(5): 2-5, illus. July 1955.
Wild turkeys in W. Va. are well able to take care of themselves in hard winters unless snow is exceptionally deep or heavily crusted. Even then they fall back on emergency foods, feed around seeps, or seek lower altitudes. Starvation has occurred in W. Va., but only seldom and locally. Artificial feeding is usually unnecessary. If it is done, it should be well planned and carefully kept up. Details are given on all these points.

Lewis, John. (Mo. Cons. Comm.) DOUBLE-BARRELED APPROACH. Mo. Cons. 16(8): 5-7, illus. Aug. 1955.
Discusses Missouri's new turkey stocking projects. Favorable, improved areas in s. Mo. are receiving transplanted wild turkeys. Two areas in n. Mo. are being stocked with good strains of semi-wild turkeys from Md. and Pa. Diminution of poaching and woods burning and improved public attitude toward protecting planted turkeys give hope that the stocking may have some success.

BIRDS--DOVES AND PIGEONS

Austin, O. L., Jr. (Res. Studies Inst., Maxwell Air Force Base, Ala.) [REVIEWS OF PAPERS ON DOVE MANAGEMENT STUDIES IN N. C. AND FLA.] Bird-Banding 26(2): 83-85. Apr. 1955.

Austin violently attacks 2 official PR reports (see WR 77: 51 & 52). He criticizes planning, methods, data handling, logic, and conclusions. Especially under fire are figures on effect of hunting on populations. Austin obviously feels that recent dove studies have grossly underestimated the effect of hunting and are little more than propaganda for relaxed hunting regulations. The author's arguments must be considered, but they will be weakened in the minds of many readers by such evidences of partisanship as the following statement: "If this paper is a fair sample of the use to which Pittman-Robertson funds have been put, I shudder for the future of government subsidized research in the natural sciences. It will not take many such biased and badly executed reports to damage irreparably the scientific reputations of those ornithologists who make their livings by working for the taxpayer."

Dahlgren, Robert B. FACTORS AFFECTING MOURNING DOVE POPULATIONS IN UTAH. M. S. thesis, Utah St. Agr. Coll. 1955.--J. B. Low.

Ferguson, Ed H., Jr. (Texas Game Comm.) THE WHITE-WINGED DOVE. Texas Game & Fish 13(8): 10-14, 28-29, illus. Aug. 1955.

Semitechnical review of biology and management of this dove in Texas. Table shows estimates of populations, kills, and percentage of population killed each year, 1949-53. Season has been closed since 1953.

Goodwin, D. NOTES ON EUROPEAN WILD PIGEONS. Avic. Mag. 61: 54-85. 1955. [Copy of notice by R. A. H., Ibis 97(3).]

"A useful review of the literature on the behavior of pigeons, with many original observations."

Miller, Wilmer J., and Frederic H. Wagner. (U. Wis.) SEXING MATURE COLUMBIFORMES BY CLOACAL CHARACTERS. Auk 72(3): 279-285 + 2 pl. July 1955.

Summary: "Conical papillae terminating the vasa deferentia are situated on each side of the cloaca of males of 30 species of Columbiformes. These are lacking in females which have a left oviduct opening. These characters formed the basis of a simple sexing method which allowed sexing accuracy well above 90 per cent for the species studied. None was incorrectly sexed. Premature development of the papillae both in male and female squabs was stimulated by androgen injection; premature development of the oviduct opening was stimulated by estrogen in the females but not in males."

Swank, Wendell G. (Ariz. Game Comm.) FEATHER MOLT AS AN AGEING TECHNIQUE FOR MOURNING DOVES. J. Wildl. Mgt. 19(3): 412-414. July 1955.

Data on rate of molt were taken on 13 caged mourning doves and on molt of 16 recaptured juvs. banded as nestlings. Statistical methods indicated that molt of caged birds began an average of 17 days later than that of wild doves, but once molt began the rate was the same for both groups. A correction factor was applied to data from penned birds, the data were pooled, and an ageing table was constructed. Use of the table for ageing fall-killed birds in the southern U. S. gave satisfactory results up to Oct. 15th. After that date, increasing numbers of both juv. and adult birds had completed their molts, making it impossible to determine age classes of these birds.--Wendell Swank.

Swank, Wendell G. (Ariz. Game Comm.) NESTING AND PRODUCTION OF THE MOURNING DOVE IN TEXAS. Ecol. 36(3): 495-505, graphs. July 1955.

Studies were conducted on the campus of A. & M. College of Texas during 1949-51. For nest sites, a decided preference was shown for trees containing leaves over trees not leafed out. Active nests were found in all months except Nov. and Dec., but a truly active nesting period extended from March 10 to Sept. 10. Of nestings in which young were successfully reared to fledgling stage, those during May, June and July made up 72% of the total. The first week in June 1950 there were 89 active dove nests on an 81 acre area. During the complete 1950 nesting season, 648 nests were found on this area. Seven

BIRDS--DOVES AND PIGEONS--Continued

pairs of marked doves reared 46 young to fledgling stage. On this basis the fall population should consist of 77% birds of the year. Analysis of birds in hunters' bags showed that 60% of the population were birds of the year. Some of this discrepancy could be attributed to the high success of nestings of marked birds. They suffered only 20% nesting mortality, while the average for the whole study area was 38.3%. Limited band returns indicate that first year birds from College Station had an 86% mortality rate. Mortality rate for older birds was 45%. Wings of doves taken by hunters in Sept. and Oct. showed an average of 3.34 young per pair of adults in 1949 and 3.04 young per pair of adults in 1950. Data obtained from marked birds showed that the distance between different nesting locations for a pair of doves rarely exceeded 200 feet. For those birds marked and reidentified there was no changing of mates during the nesting season.--W. G. Swank.

Wooten, William A. (US F&WS, Eureka, Calif.) A TRAPPING TECHNIQUE FOR BAND-TAILED PIGEONS. J. Wildl. Mgt. 19(3): 411-412, illus. July 1955.
Prior to 1948, few Columba f. fasciata were banded. In 1950, a simplified type of drop-trap was successfully used by Ore. State Game Comm. personnel. In 1953, a modified form of this trap was used and 852 birds were banded in Wash., Ore. and Calif. Construction of the trap is both simple and economical. Construction and use are discussed in detail. Careful use of this trap has resulted in little or no mortality.--W. A. Wooten.

BIRDS--WATERFOWL

[Ballou, Robert M.] (Wyo. Game Comm.) WYOMING HONKERS DECREASE. Wyo. Wildl. 19(8): 4-5, illus. Aug. 1955.
Marked decline of Great Basin populations of Canada geese in Wyo. have occurred in recent years, largely because of heavy harvesting in Pacific Flyway. "Eighty-two per cent of the geese banded on Pathfinder Reservoir from 1952-1954 were taken by hunters in the Pacific Flyway... ...an annual hunting season mortality of about 55 per cent is indicated. Such a high mortality, coupled with the fact that only about one-half of the two-year old geese raise young, would theoretically result in a 50 per cent reduction in the goose population in four years. These figures and percentages confirm the actual decline in Wyoming's Great Basin Canada goose populations noted since 1954." Reduced bag limits in appropriate portions of Pacific and Central flyways are recommended.

Bell, J. Frederick, George W. Sciple, and A. A. Hubert. (Rocky Mtn. Lab., Hamilton, Mont.) A MICROENVIRONMENT CONCEPT OF THE EPIZOOLOGY OF AVIAN BOTULISM. J. Wildl. Mgt. 19(3): 352-357, illus. July 1955.
It is demonstrated that Clostridium botulinum type C will germinate, reproduce, and synthesize toxin in the intact carcasses of invertebrates. Toxin production in high concentration occurs in the carcasses irrespective of the ambient medium and the presence of dissolved or atmospheric oxygen. Evidence is presented that animal matter is a more favorable substrate than the several kinds of plant tissues tested. Evidence supporting the implication of invertebrates as sources of toxin is obtained from the fact that remains of aquatic insects have been found in the relatively rare instances when food was identifiable in intoxicated ducks.--J. Frederick Bell.

Bellrose, Frank C. (Ill. Nat. Hist. Survey.) HOUSING FOR WOOD DUCKS. Ill. Nat. Hist. Survey Div., Cir. 45, 2d printing, with revisions. iv + 48 p., illus. Feb. 1955.
The first printing was reviewed in WR 73: 67. The present version differs chiefly in that new information is given on construction of the metal nest box, which is the most nearly predator-proof of the boxes that have been tried.

Buller, Raymond J. (US F&WS, Box 1306, Albuquerque, N. M.) ROSS'S GOOSE IN TEXAS. Auk 72(3): 298-299. July 1955.
Recent records.

BIRDS--WATERFOWL--Continued

Crissey, W. F., compiler. 1955 STATUS REPORT OF WATERFOWL. US F&WS, Spec. Sci. Rep.--Wildl. no. 29. i + 105 p., maps. Aug. 1955.
"These data are brought together here for the purpose of supplying administrators with a factual basis for setting the shooting regulations for the 1955-1956 season, and for other management purposes." Data are based on 3 surveys: kill during last hunting season, wintering grounds, and breeding grounds. Results are discussed for each flyway. Results of the population and production study made on breeding grounds in 1955 are given in considerable detail for each region within a flyway. Increases or decreases are predicted for each region of the breeding grounds and for each flyway as a whole. Many of the statements and figures pertain to individual species.

Engelmann, C. VERSUCHE UBER DEN GESICHTSKREIS DER ENTEN. Z. Tierpsychol. 11: 436-445. 1954. [Copy of review by R. A. H., Ibis 97(3).]
"Experiments to ascertain the distances at which ducks could recognize various objects. The visual responses of ducks are compared with those of chickens. Ducks are less attentive to close objects--a fact perhaps related to their life on water. They see distant objects better than chickens, but are less good at recognizing near ones."

Foley, Don, and Asa H. Smith. (N. Y. Cons. Dept.) DUCKS AND THE ARMY ENGINEERS. N. Y. St. Cons. 9(6): 14-15, illus. June-July 1955.
Past dredging in the Hudson River might have done great damage to waterfowl habitat, but cooperative agreements were made with biological agencies, plans were adjusted, and large areas actually were improved for waterfowl. Now the channel is to be made 5 feet deeper and 300 feet wider; 18,000,000 cu. yds. of spoil will have to be disposed of. Plans are being made with the birds in mind and the authors are optimistic. One suggestion is that the F&WS should "defray the additional cost of using alternate spoil sites where this cost is greater than originally planned and where waterfowl habitat is being protected, maintained or developed."

Hopkins, Charles H. (Olin Indus., E. Alton, Ill.) MONEY FOR YOU IN CONTROLLED DUCK SHOOTING? Mag. of Ducks & Geese 6(3): 4-8, illus. Summer 1955.
More information on how to prepare and manage a commercial duck shooting establishment with pen-reared mallards. Includes diagrams of layout and specifications for holding pens and flight tower. The editor, J. L. Peyton, makes an interesting suggestion: "For seasons or states where local regulations interfere with Mallard shooting, how about Muscovies? The dark varieties, to avoid the barnyard look. The drakes are four or five times as big as wild Mallards, swift on the wing, and wild enough in appearance to suit the most exacting. Large numbers of this breed could be produced at low cost--less per pound, but not per bird, than Mallards."

Keefe, Jim. (Mo. Cons. Comm.) A DATE AT DUCK CREEK. Mo. Cons. 16(8): 10-12, illus. Aug. 1955.
The 4,300-acre Duck Creek Wildlife Management Area near Puxico in se. Mo. is something special in waterfowl hunting areas. It is adjacent to Mingo Natl. Wildl. Refuge and has its water supply assured by a 7-mile canal from a river. The area has 4 parts. A tract of 1,200 acres is farmland for geese. Pool 1 is the reservoir. It is 3 miles long and a mile wide, and is expected to provide good fishing. Pools 2 and 3 will be handled by draw-down and seasonal flooding. 100,000 ducks visited the area in 1954 and famous hunting is anticipated. Blinds and decoys will be available for reasonable fees. Facilities should be reserved in advance; any that are not reserved will go to first claimants.

BIRDS--WATERFOWL--Continued

Neff, Johnson A. (US F&WS, Denver 2, Colo.) OUTBREAK OF ASPERGILLOSIS IN MALLARDS. J. Wildl. Mgt. 19(3): 415-416. July 1955.
Describes an outbreak of aspergillosis in wild mallards during winter of 1948-49 near Boulder, Colo. During a severe snow storm, ducks fed upon mouldy ensilage scattered on top of the snow on a farm a few miles from the resting lake. Losses during the week Jan. 18-25, 1949 totaled 1,000 to 1,100 mallards, most of them fat and heavy. Outbreak ended with melting of snow and return of normal feeding conditions.--J. A. Neff.

Nelson, Urban C. (US F&WS, Juneau, Alaska.) WATERFOWL BANDING AND MIGRATIONS IN ALASKA. Sci. in Alaska 1952. Proc. 3d Alaskan Sci. Conf., Alaska Div. A.A.A.S., p. 201-207. Published at College, Alaska, Sept. 1954.
Recent banding efforts are reported and results are discussed (with 7 tables) in terms of migration patterns. Various ducks and geese are discussed, but most attention is given to migration routes and mortality with age of black brant.

Smith, Allen G., and Harry R. Webster. (US F&WS, Brigham City, Utah.) EFFECTS OF HAIL STORMS ON WATERFOWL POPULATIONS IN ALBERTA, CANADA - 1953. J. Wildl. Mgt. 19(3): 368-374. July 1955.
Study of 2 hail storms, 1 of which covered 700 sq. mi. of parklands and another 260 sq. mi. of prairie, revealed that storms causing 100% damage to grain crops cause destruction of up to 93% of adult and juvenile waterfowl populations. Effects of hail storms on both environment and species inhabiting it are described. Mortality caused by the 2 storms in 1953 was approximately 150,000 waterfowl of all ages. Scores of other destructive hail storms occurred in this same year. Their effects were impossible to appraise, but it is clear that hail storms are high in the list of influences decimating waterfowl populations.--Allen G. Smith.

Smith, Donald A. AN ECONOMIC EVALUATION OF SELECTED TREATMENTS FOR AVIAN BOTULISM IN WATERFOWL ON UTAH MARSHES, 1953-54. M. S. thesis, Utah St. Agr. Coll. 1955.--J. B. Low.

Smith, Robert I. THE BREEDING TERRITORY AND ITS RELATIONSHIP TO WATERFOWL PRODUCTIVITY AT OGDEN BAY BIRD REFUGE. M. S. thesis, Utah St. Agr. Coll. 1955.--J. B. Low.

Stotts, V. BLACK DUCK BREEDING STUDY ENDS IN THE KENT ISLAND AREA. Md. Tidewater News 12(4): 1, 4. Sept. 1955.
Summary of a study made in Md. 1953-54 and submitted as a Master's thesis at U. Ill. Nesting occurred from Mar.-Aug. with peak about May 1. Eighty percent of nests were in wooded areas, fewer in marshes and cultivated areas. About 37% of nesting attempts were successful. Adverse factors were tidal flooding, mowing, egg predation by crows, and egg gathering by people. Concentrated nesting favored predation on eggs by crows and people. Territorial and other behavior associated with breeding are described. Clutch size ranged from 3-14, av. 8.9. Primary nests produced 2-3 more young than later nests. Frequency and timing of renesting are discussed. Incubation period was 23-30 days, av. 25.8. All eggs of a clutch hatched in 3-4 hours. Only 33.3% of all nests were successful, but with renesting 62.0% of breeding population produced broods. Number of young to leave nest was 4.7 per breeding pair. Brood mortality was 9.2%. Number of young to reach flying age was 4.3 per breeding pair. Young gained weight at a uniform rate. Their av. weight in 12th week was 2.16 lbs. Ability to fly came in 8th to 10th week. Development of juvenile plumage continued after flight began. Last down disappeared in 4 recognizable stages over about 25 days. Some young dispersed to states n. and w. of Md. but few to s. Over 70% of returns were from within a 50 mi. radius. Apparently many black ducks are local in their distribution.

BIRDS--CRANES, RAILS, SHOREBIRDS

Liscinsky, Stephen A., and William J. Bailey, Jr. (Pa. Game Comm.) A MODIFIED SHOREBIRD TRAP FOR CAPTURING WOODCOCK AND GROUSE. J. Wildl. Mgt. 19(3): 405-408, illus. July 1955.

A satisfactory method for making multiple captures of woodcock and grouse in the summer and fall is described. Basically, the trap is a modification of a shorebird trap and involves the principle of guiding birds into the holding compartment by means of a wire-mesh fence. Techniques in trap placement as well as in trap construction are discussed.--S. A. Liscinsky.

MacNamara, L. G. (N. J. Div. Game.) THE 1955 CLAPPER RAIL SEASON. N. J. Outdoors 6(3): 4-7, illus. Sept. 1955.

Peak of nest destruction by high tides occurred in 1955, in N. J. Study of nests in 5 areas revealed 50% decrease in production, from 93 nests in 1954 to 47 in 1955. The bulk of the hatch was late. Consequently, season was opened 2 weeks later and shortened by 2 weeks, and bag limit was reduced to 10.

OTHER BIRDS

Chapman, Lawrence B. (Wild Acres, Princeton, Mass.) STUDIES OF A TREE SWALLOW COLONY (THIRD PAPER). Bird-Banding 26(2): 45-70, graph. Apr. 1955.

After 22 years of study the author summarizes his findings on such topics as returns of banded birds, nesting success, wanderings, recoveries of birds banded as nestlings, effects of weather on breeding, factors in nesting success, behavior, pair bond.

Davis, David E. (Johns Hopkins School Hygiene, Balt. 5, Md.) POPULATION CHANGES AND ROOSTING TIME OF STARLINGS. Ecol. 36(3): 423-430, illus. July 1955.

Drost, Rudolf. PROBLEMS OF CONTROLLED SEA BIRD PROTECTION. Ornith. Mitteilungen 6(6/7): 112-119. 1954. [Copy of review by R. O. Bender, Bird-Banding 26(1).]

"This is a very interesting discussion of the problem of maintaining a balance in the protection of sea bird colonies. When gulls and other aggressive forms are protected, their resulting increase may diminish the populations of other species. The principal conclusion is that protective measures must be instituted for large areas on a scientific basis rather than for local areas on an emotional basis." In German.

Imler, Ralph H., and E. R. Kalmbach. (US F&WS.) THE BALD EAGLE AND ITS ECONOMIC STATUS. US F&WS, Cir. 30. iii + 51 p., illus. 1955. 30¢ from Superintendent of Documents.

This is the major paper on food habits of the American eagle, especially in Alaska. It contains good reviews of natural history and conservation status of the species. Some important topics considered are: range, abundance, plumage, sex ratio, weights and measurements (includes original data), nests and young, legislation, and bounties. Food habits, of course, are treated in great detail. The species is still decreasing in many parts of the U. S. but probably is gaining in Alaska since removal of bounty. Much of the fish eaten is carrion and the authors are convinced that the eagle is not a serious drain on the fishery resource. About 18% of the diet in Alaska consists of birds, mostly waterfowl and abundant kinds of sea birds. Eagles are known to attack and eat deer, but not commonly. Many hares are eaten at some times and places. Carrion of many sorts is taken. In general, the eagle seems to be more or less neutral in its overall economics. No control program is needed, but it is desirable to retain regulations that permit killing eagles when they are actually doing harm.

Meanley, Brooke. (US F&WS, Stuttgart, Ark.) A NESTING STUDY OF THE LITTLE BLUE HERON IN EASTERN ARKANSAS. Wilson Bul. 67(2): 84-99, illus. June 1955.

Habitat, arrival dates, courtship, nest building, laying, clutch size, incubation, care and behavior of young, nesting success, foods of young.

OTHER BIRDS--Continued

Scheffer, Theo. H. (Puyallup, Wash.) PRESENT STATUS OF THE INTRODUCED ENGLISH SKYLARK ON VANCOUVER ISLAND AND OF THE CHINESE MYNAH ON THE VANCOUVER MAINLAND. Murrelet 36(2): 28-29. May-Aug. 1955.

Sutton, George M., and David F. Parmelee. (U. Okla.) SUMMER ACTIVITIES OF THE LAPLAND LONGSPUR ON BAFFIN ISLAND. Wilson Bul. 67(2): 110-127, illus. June 1955.
Good nesting study.

Tordoff, Harrison B. (U. Kans.) FOOD-STORING IN THE SPARROW HAWK. Wilson Bul. 67(2): 139-140. June 1955.

REPTILES AND AMPHIBIANS

Anonymous. MILLION DOLLAR LEGS. Fla. Wildl. 9(3): 14-15, 37, illus. Aug. 1955.
Frog hunting is still important business in Fla. At a conservative estimate, annual commercial production is 900,000 lbs. of frog legs. This amount represents a catch of 9 million frogs and has wholesale value of $1,125,000. A frogger will average 30-35 lbs. of legs a night and occasionally gets 100 lbs. He sells his catch at prices that vary downward from $1.25 per lb., depending on time of year. On the average, he will gross around $25 a night but he may gross up to $125 a night. There are 200-300 commercial froggers in Fla. and many part-timers and amateurs. The professionals operate at least half the nights of the year. Most of this commercial frogging is done from air boats in the Everglades region. Production of frogs has slumped drastically in the last few years and the state has launched a PR project to find out why. Preliminary results indicate that heavy hunting pressure, continual disturbance, taking of smaller size groups, and continuing loss of habitat are basic reasons for decline.

Barton, A. J., and John W. Price, Sr. (Stony Brook School, Stony Brook, N. Y.) OUR KNOWLEDGE OF THE BOGTURTLE, CLEMMYS MUHLENBERGI, SURVEYED AND AUGMENTED. Copeia 1955(3): 159-165, map & graph. Aug. 1955.
Range, habitat, behavior, food, reproduction, sexual dimorphism, size and growth.

Blair, W. Frank. (U. Texas.) DIFFERENTIATION OF MATING CALL IN SPADEFOOTS, GENUS SCAPHIOPUS. Texas J. Sci. 7(2): 183-188, illus. June 1955.

Bleakney, Sherman. (Natl. Mus. Can., Ottawa.) RANGE EXTENSIONS OF AMPHIBIANS IN EASTERN CANADA. Can. Field-Nat. 68(4): 165-171, maps. Oct.-Dec. 1954. [Sept. 1955.]
Statements of amphibian ranges published in U. S. works often are seriously in error for e. Canada. The present paper contains 28 range extension records for frogs and 23 for salamanders. Some extensions are of hundreds of miles.

Brattstrom, Bayard H., and James W. Warren. (U. Calif. at Los Angeles.) OBSERVATIONS ON THE ECOLOGY AND BEHAVIOR OF THE PACIFIC TREEFROG, HYLA REGILLA. Copeia 1955(3): 181-191, map. Aug. 1955.
Temperature data, habitats, color changes, vision, function of singing, sex discrimination, spatial localization, tadpole aggregation, feeding, seasonal activity, hybridization, rearing tadpoles artificially.

Burch, Paul Randolph, and John Thornton Wood. (Redford Coll.) THE SALAMANDER SIREN LACERTINA FEEDING ON CLAMS AND SNAILS. Copeia 1955(3): 255-256. Aug. 1955.
Includes review of controversy on food habits of this species.

REPTILES AND AMPHIBIANS--Continued

Carpenter, Charles C. (U. Okla.) SOUNDING TURTLES: A FIELD LOCATING TECHNIQUE. Herpetologica 11(2): 120. July 1955.
Debris, earth, etc. are probed with a blunt-ended rod of aluminum tubing. Sound of rod striking carapace of concealed turtle is characteristic. Turtles frequently have been located under several inches of soil.

Cooper, John E. NOTES ON THE AMPHIBIANS AND REPTILES OF SOUTHERN MARYLAND. Md. Nat. 23(3/4): 90-100. 1953. [Aug. 1955.]
Annotated list of specimens collected or observed by author in Charles and St. Mary's counties. Also interesting hypothetical list.

Edgren, Richard A. (G. D. Searle & Co., Chicago, Ill.) THE NATURAL HISTORY OF THE HOG-NOSED SNAKES, GENUS HETERODON: A REVIEW. Herpetologica 11(2): 105-117. July 1955.
Compilation of information on such topics as eggs, hibernation, breeding, foods, burrowing, enemies, parasites. It would be useful to have summaries of this sort for all groups.

Gloyd, Howard K. (Chi. Acad. Sci.) A REVIEW OF THE MASSASAUGAS, SISTRURUS CATENATUS, OF THE SOUTHWESTERN UNITED STATES (SERPENTES: CROTALIDAE). Bul. Chi. Acad. Sci. 10(6): 83-98, map. Aug. 1955.
Thorough presentation of characteristics and ranges of the 2 southwestern races, edwardsi and tergeminus. Previously only 1 sw. race has been recognized.

Lowe, Charles H., Jr., and Velma J. Vancé. (U. Ariz.) ACCLIMATION OF THE CRITICAL THERMAL MAXIMUM OF THE REPTILE UROSAURUS ORNATUS. Science 122(3158): 73-74, graph. July 8, 1955.
"After 7 to 9 days acclimation at a constant temperature of 35°C, the critical thermal maximum was increased by 1.4°C, and the resistance time at 44°C was approximately doubled."

Marshall, William H., and Murray F. Buell. (U. Minn.) A STUDY OF THE OCCURRENCE OF AMPHIBIANS IN RELATION TO A BOG SUCCESSION, ITASCA STATE PARK, MINNESOTA. Ecol. 36(3): 381-387, illus. July 1955.
Numerical occurrence of 7 species of frogs in the zones of a bog. Stomach contents are tabulated for Rana pipiens, R. sylvatica, Pseudacris nigrita, and Hyla crucifer. Microclimatic and cover-type factors that may influence frog distribution in the bog are discussed.

Martof, Bernard. (U. Ga.) OBSERVATIONS ON THE LIFE HISTORY AND ECOLOGY OF THE AMPHIBIANS OF THE ATHENS AREA, GEORGIA. Copeia 1955(3): 166-170. Aug. 1955.
Annotated list with data on habitats, abundance, breeding, variation.

Martof, Bernard, and Robert L. Humphries. (U. Ga.) OBSERVATIONS ON SOME AMPHIBIANS FROM GEORGIA. Copeia 1955(3): 245-248. Aug. 1955.
Critical notes on distribution and taxonomy of 7 species, with data on ecology and variation.

McFarland, William N. (U. Calif. at Los Angeles.) UPPER LETHAL TEMPERATURES IN THE SALAMANDER TARICHA TOROSA AS A FUNCTION OF ACCLIMATION. Copeia 1955(3): 191-194, graph. Aug. 1955.
Experimental study.

REPTILES AND AMPHIBIANS--Continued

Pearson, Paul G. (U. Tulsa, Okla.) POPULATION ECOLOGY OF THE SPADEFOOT TOAD, SCAPHIOPUS H. HOLBROOKI (HARLAN). Ecol. Monog. 25(3): 233-267, 10 figs. July 1955.

An intensive study of the population dynamics of the spadefoot toad in Fla., 1951-53. Natural populations of special areas were studied by systematic observation and collection. Toads were marked and released at capture sites. Fenced populations of known density were similarly studied. Ecological correlations are emphasized and are tested statistically. Significant findings are reported on activity and home ranges in relation to weather, habitat, and population density. Other important findings concern burrow distribution and use, range shape, territoriality, breeding behavior and success, growth, survival, and changes in numbers and age composition of the population.--L. F. Stickel.

Seguin, Richard L., and others. (Quebec Biol. Bureau, P. O. Box 6128, Montreal 2, P. Q.) FROG RAISING? Reclamation Era 41(3): 78. Aug. 1955.

The June 1953 issue of Reclamation Era carried an article (see WR 75: 67) on the mechanized frog farm of Frank Ondricek of Orland, Calif. Operations were said to be successful but marketing had not begun. Here is the sequel. The Quebec Biological Bureau, U. of Montreal, had written to biologists in every U. S. state and Canadian province asking whether they had data to show that frog farming could succeed. Practically every one of the many answers said distinctly "No." Not one said "Yes." In reply to inquiry, the Calif. Dept. of Fish & Game stated that the Ondricek frog venture had failed after being written up. Seguin sent this information to editor of Reclamation Era and requested comment. Editor replied that Ondricek went out of frog business largely because thieves stole most of his marketable frogs. Ondricek still believes that frogs can be reared commercially in artificial ponds. He himself has switched to rearing bait minnows, which require much less work. [In other words, there still is no satisfactory evidence that frogs have been or can be reared artificially for profit in North America. We do not know that frog farming has succeeded anywhere.]

Smith, Hobart M., and Fred N. White. (U. Ill.) ADRENAL ENLARGEMENT AND ITS SIGNIFICANCE IN THE HOGNOSE SNAKES (HETERODON). Herpetologica 11(2): 137-144. July 1955.

It is shown that Heterodon and Xenodon have disproportionately large adrenal glands. It is hypothesized that this is an adaptation to eating toads, which have highly toxic, glandular skins. Much information is given on poisons secreted by toads.

Sooter, Clarence A. (US Pub. Health Serv., Greeley, Colo.) TECHNIQUE FOR BLEEDING SNAKES BY CARDIAC PUNCTURE. Copeia 1955(3): 254-255 + 1 pl. Aug. 1955.

Tinkle, Donald W., and Robert G. Webb. (Tulane U.) A NEW SPECIES OF STERNOTHERUS WITH A DISCUSSION OF THE STERNOTHERUS CARINATUS COMPLEX (CHELONIA, KINOSTERNIDAE). Tulane Studies in Zool. 3(3): 54-67, illus. Aug. 1955.

Four species of the genus are recognized in this revision: S. odoratus, carinatus, depressus (sp. nov.), and minor (with 2 races). Map and key are included.

Van Riper, Walker. (Denver Mus. Nat. Hist.) HOW A RATTLESNAKE STRIKES. Nat. Hist. 64(6): 308-311, illus. June 1955.

Tests made with high-speed flash photography demonstrate that prairie rattlers ordinarily stab rather than bite when they strike, that venom is released during the stab (biting not necessary), that average speed of strike is 8.1 ft. per second for snakes tested (not especially fast as animal motions go), and that rattlers can strike straight upward.

REPTILES AND AMPHIBIANS--Continued

Vernberg, F. John. (Duke U.) HEMATOLOGICAL STUDIES ON SALAMANDERS IN RELATION TO THEIR ECOLOGY. Herpetologica 11(2): 129-133. July 1955.
Summary: "The size and number of red blood cells of 12 species of salamanders was determined. In addition, blood sugar level determinations of some of these species were made. Results indicate that physiological adaptation of species has occurred, and that salamanders considered to be most active have a higher blood sugar level and smaller but more numerous red blood cells."

VEGETATION--GENERAL, ECOLOGY, CONTROL, TECHNIQUES

Bramble, William C., and Roger H. Ashley. (Pa. St. U.) NATURAL REVEGETATION OF SPOIL BANKS IN CENTRAL PENNSYLVANIA. Ecol. 36(3): 417-423, illus. July 1955.
Summary: "An investigation of the development of natural vegetation was made on 20 [strip-mine] spoil banks in central Pennsylvania ranging from 2 to 35 years in age. Owing to severe site conditions, the pioneer community was dominated by trees and shrubs capable of invading highly unfavorable sites by means of seeds transported by wind and animals, often from considerable distances. An aspen-fire cherry association has been described as the most common dominant pioneer plant community found on upland spoil banks. Aspen, fire cherry, and red maple were the common and characteristic species of the tree layer. Blackberry, sweetfern, sumac and prairie willow were characteristic shrubs. A sparse layer of herbs and grasses formed the ground layer. The stocking with trees averaged 36.2 per cent and was of low value for production of wood products. Game cover and food produced was of low value, also; but surprisingly frequent use was made of spoil areas by certain animals, particularly deer mice. Aesthetically, natural plant cover offers but a sparse and unattractive cover for spoil areas for at least 35 years."

Goodall, D. W. (U. Reading, Eng.) OBJECTIVE METHODS FOR THE CLASSIFICATION OF VEGETATION. III. AN ESSAY IN THE USE OF FACTOR ANALYSIS. Austral. J. Bot. 2(3): 304-324. Nov. 1954. [From J. Range Mgt. 8(3).]

Lindsey, Alton A. (Purdue U.) TESTING THE LINE-STRIP METHOD AGAINST FULL TALLIES IN DIVERSE FOREST TYPES. Ecol. 36(3): 485-495, 1 fig. July 1955.
From summary: "The line-strip sampling unit is a combination of line interception and quadrat methods in which only the line is surveyed. The line-strip method is shown statistically, and by comparison with full tallies, to be suitable for detailed studies in three diverse types of eastern coniferous forests...and in a maple-beech stand." Uses and advantages of the method are discussed.

Martin, J. Lynton. (Forest Biol. Div., Can. Dept. Agr.) OBSERVATIONS ON THE ORIGIN AND EARLY DEVELOPMENT OF A PLANT COMMUNITY FOLLOWING A FOREST FIRE. Forestry Chron. 31(2): 154-161, illus. June 1955.
Abstract: "The origin of the species on a burned-over area in southwestern Nova Scotia was determined by means of covered plots, and the early stages of succession were followed closely for two years. All of the herbaceous and shrub species which appeared on the area during the first two years were survivors of the fire. Bracken fern showed unquestionable dominance the first year, but its position was severely contested by other herbaceous species and the heath plants during the second year. Seedlings of grey birch and large-toothed aspen appeared the second year and were restricted to patches of bare mineral soil. Sucker growth of red oak, red maple and grey birch was rapid, but it was pruned heavily by deer feeding."

Poore, M. E. D. (Nat. Conservancy, 12 Hope Terr., Edinburgh, Scot.) THE USE OF PHYTOSOCIOLOGICAL METHODS IN ECOLOGICAL INVESTIGATIONS. III. PRACTICAL APPLICATION. J. Ecol. 43(2): 606-651, illus. July 1955.
A detailed report on a study of vegetation made by Poore's modification (see WR 80: 44) of methods of Braun-Blanquet. The locality studied was in mountains in the Breadalbane area of Perthshire. The paper closes with comments on methods and concepts that are of importance in classifying vegetation.

VEGETATION--GENERAL, ECOLOGY, CONTROL, TECHNIQUES--Continued

Robinson, P. (E. Afr. Agr. & Forestry Res. Organization, Kenya.) THE ESTIMATION OF GROUND COVER BY THE POINT QUADRAT METHOD. Ann. Bot. n.s. 19(73): 59-66. Jan. 1955. [From J. Range Mgt. 8(3).]

VEGETATION--TREES

Billings, W. D. NEVADA TREES. 2nd ed. U. Nev., Agr. Ext. Serv. Bul. 94. 125 p., illus. Mar. 1954. [From Monthly Checklist of State Publ. 46(7).]

Brush, Warren D., and G. H. Collingwood. KNOWING YOUR TREES. Am. Forestry Assn. (Wash., D. C.). 328 p., illus. 1955. $6.00. [From review in J. Forestry 53(9).]
New edition and 15th printing of an old standby. "As before [it] contains detailed descriptions necessary to species identification and general information about each tree--range, economic importance, characteristics of its wood, use by wildlife, special insect enemies and other pertinent facts." Tree species covered number 162. Comparisons between species have been sharpened to bring out differences and similarities. Timber stand and lumber cut figures have been brought up to date. A map showing hardiness zones has been added. The closeup photographs of fruit, leaves, and bark are notable for their clarity of detail.

California. FORESTS OF CALIFORNIA, TREASURE CHEST FOR THE NEEDS OF MAN. Calif. Dept. Nat. Resources. 147 p., illus. 1955. [From Monthly Checklist of State Publ. 46(7).]

Curry, John R., and F. M. Rushmore. (Whitney Indus., Sabattis, N. Y.) EXPERIMENTS IN KILLING NORTHERN HARDWOODS WITH SODIUM ARSENITE AND AMMONIUM SULFAMATE. J. Forestry 53(8): 575-580. Aug. 1955.
"This article reports on a comprehensive study of the quantities of sodium arsenite and ammate required to kill large beech, birch, and maple trees at two different seasons of the year. The chemicals were applied in solution through holes bored in the trees." This method of application is thought to offer relatively low risk to animal life.

Division of Forest Economics. FOREST STATISTICS FOR NEW YORK. US Forest Serv., NE Forest Exp. Sta. (Upper Darby, Pa.). ii + 63 p., maps & graphs. 1955.
Area, ownership, forest types, volume, merchantable sawtimber, pulp, timber quality, growth, blowdown, etc.

Gysel, Leslie W., and John L. Arend. (Mich. St. U.) OAK SITES IN SOUTHERN MICHIGAN: THEIR CLASSIFICATION AND EVALUATION. Mich. St. Coll., Agr. Exp. Sta., Tech. Bul. 236. 57 p. 1953.
Sites in 118 sample areas were evaluated to determine the capability of different types of land for oak production in s. Mich. Soil and land features found to have considerable effect on the growth of oak include: (1) Texture of subsoil. (2) Presence of moist substrata layers within approximately 4 to 10 feet of surface. (3) Steepness of slope. (4) Position on slope. Land on which oak commonly grows is described by various combinations of these site characteristics which are grouped into 5 land capabilities or site classes. The productivity of a site is related not only to growth of oak but also to species of oak found, to quality of trees, and to proportion of oak reproduction.--L. W. Gysel.

Honey, E. F. THE DISTRIBUTION AND PREVENTION OF OAK WILT. Pa. St. U., Coll. Agr. Ext. Serv., Cir. no. 448. 7 p. 1955? [From J. Forestry 53(8).]

Kukachka, Emil. (Minn. Div. Forestry.) UNGRAZED WOODLOTS PAY OFF! Cons. Volunteer 18(106): 36-39. July-Aug. 1955.
Brings together evidence from different studies to show that woodlot grazing is injurious to soil, water, and forest resources and provides little forage. Tells how landowners benefit from stopping the practice.

VEGETATION--TREES--Continued

Larson, Charles C. TIMBER RESOURCES AND THE ECONOMY OF THE SARANAC LAKE-LAKE PLACID AREA. N. Y. St. Coll. Forestry (Syracuse), Bul. 32. 42 p., illus. 1954. 75¢. [From Monthly Checklist of State Publ. 46(6).]

McCormack, James F. FOREST STATISTICS FOR THE NORTHERN COASTAL PLAIN OF NORTH CAROLINA, 1955. US Forest Serv., SE Forest Exp. Sta. (Asheville, N. C.), Forest Surv. Rel. no. 45. ii + 44 p., map & graphs. June 1955.

Northeast Forest Survey. FOREST STATISTICS FOR THE ANTHRACITE SECTION OF PENNSYLVANIA. US Forest Serv., NE. Forest Exp. Sta. (Upper Darby, Pa.), Forest Statistics Ser., Pa. no. 1. ii + 16 p. 1955.
Counties involved are Northumberland, Montour, Columbia, Luzerne, Carbon, and Schuylkill.

Rosendahl, Carl Otto. TREES AND SHRUBS OF THE UPPER MIDWEST. U. Minn. Press. 411 p., illus. 1955. $6.00.
An enlargement and revision of Rosendahl and Butters' "Trees and Shrubs of Minnesota," published in 1928. The present book covers Minn., Wis., northern Iowa, and the Dakotas e. of the Mo. River. It has keys, detailed descriptions, and many fine illustrations.--Neil Hotchkiss.

Swain, Lewis C. ECONOMICAL TREE KILLING. U. of N. H., Agr. Exp. Sta. (Durham), Sta. Bul. 408. 1-15 p., illus. April 1954.
How to kill unwanted trees with chemicals. Emphasis is on the cheap, simple, safe method of slipping tabs of blotting paper soaked in sodium arsenite under the bark. This works on both hardwoods and conifers. It presents almost no danger to wildlife.

THE FORESTS OF NEW ENGLAND; REPORT OF THE COMMITTEE OF NEW ENGLAND OF THE NATIONAL PLANNING ASSOCIATION. New England Council (Boston, Mass.). Economic State of New England. No. 1. 58 p. 1954. 60¢. [From J. Forestry 53(8).]

VEGETATION--PASTURE AND RANGE

Arnold, Joseph F. (Rocky Mtn. Forest & Range Exp. Sta., Ft. Collins, Colo.) PLANT LIFE-FORM CLASSIFICATION AND ITS USE IN EVALUATING RANGE CONDITIONS AND TREND. J. Range Mgt. 8(4): 176-181, illus. July 1955.
"Plant life form provides a convenient basis for visually evaluating (1) ecological dominance and subordination in natural communities, (2) the susceptibilities of different plants to grazing injury and to injury from other land-use disturbances, and (3) stages of secondary succession and recovery that result when disturbances are reduced or removed." Life forms considered here include perennial tall grasses, perennial short grasses, short-lived half-shrubs, annuals, and others. Examples are from highlands of Ariz.

Burcham, L. T. (Calif. Div. Forestry, Sacramento.) RECENT TRENDS IN RANGE IMPROVEMENT ON CALIFORNIA FOOTHILL RANGES. J. Range Mgt. 8(3): 121-125, illus. May 1955.
Discussion of merits of mechanical clearing, burning, herbiciding, and reseeding for conversion of chaparral range to grass. Burning may be less important, and mechanical clearing and herbiciding more important than generally thought. "With an intensive job of range improvement the rancher may recover a fairly high per acre investment in from three to five years; ordinary controlled burning, without seeding or follow-up, may not repay the cash outlay."

Heady, Harold F. (U. Calif.) TECHNIQUES USEFUL IN RANGE RESEARCH. J. Range Mgt. 8(3): 114-116. May 1955.
Brief survey of recent advances and suitable approaches.

VEGETATION--PASTURE AND RANGE--Continued

Joint Committee on Grassland Farming. THE NEW GRASSLAND-LIVESTOCK HANDBOOK. Revised ed. U. Okla. Press. 1-49 p., illus. 1955. 50¢.

We have heard that farming has changed more in the last 30 years than in all time before. Booklets such as this one bridge the gap from the research man to the man on the land. "The Handbook" is a simply written pamphlet, but it is the work of more than 50 specialists. In practical and reliable form it answers scores of a farmer's questions: When should lime be applied? How about secondary and trace elements? Does use of nitrogen fertilizers pay? What are the best pasture mixtures in my region? How is rotational grazing managed? What is zero pasture? What are the best long-lived hay crops? Why is it important to cut hay at the right stage? What amounts of added treatments should be used in making high quality silage? How should grass silage be fed? What are the mechanical methods for applying preservatives to make grass silage? These and many other questions are answered in such a way as to give a good background and a good bit of practical guidance.

Robocker, W. C., and Bonita J. Miller. (US Dept. Agr., Reno, Nev.) EFFECTS OF CLIPPING, BURNING AND COMPETITION ON ESTABLISHMENT AND SURVIVAL OF SOME NATIVE GRASSES IN WISCONSIN. J. Range Mgt. 8(3): 117-120, illus. May 1955.

Tomanek, G. W., F. W. Albertson, and Andrew Riegel. (Ft. Hays Kans. St. Coll.) NATURAL REVEGETATION ON A FIELD ABANDONED FOR THIRTY-THREE YEARS IN CENTRAL KANSAS. Ecol. 36(3): 407-412, illus. July 1955.

From summary: "After 33 years of recovery under protection, the vegetation had a basal cover of 32.8 per cent. It was composed of 55.6 per cent long-lived and 44.1 per cent short-lived perennials. The grazed area had only 32.8 per cent short-lived species and the rest were long-lived. The principal long-lived species under grazing was buffalo grass which helped to account for the higher basal cover (52.3 per cent). The protected area had attained 53.1 per cent of climax composition while the grazed location had only 27.8 per cent. Comparisons were made with a previous study by Riegel (1944) on the same area after 23 years of recovery."

VEGETATION--WET-LAND

Beal, Ernest O., and Paul H. Monson. (N. C. St. Coll.) MARSH AND AQUATIC ANGIOSPERMS OF IOWA. St. U. Iowa, Studies in Nat. Hist. 19(5): 1-95, illus. 1954. $1.00

Has keys for identification of 224 species, maps showing their distribution by counties, notes on habitats and general and local distribution, and comments on the taxonomy of a few species.--Neil Hotchkiss.

Beal, Ernest Oscar. TAXONOMIC REVISION OF THE GENUS NUPHAR SM. Ph. D. thesis, U. Iowa. 118 p. 1955. [From long abstract in Dissertation Abstracts 15(6).]

Yellow pond lilies of America are all termed N. luteum, but several geographic subspecies are recognized.

GENERAL CONSERVATION, WATER, AND CLIMATE

Hall, Albert G. BATTLE OF THE BOTTOMLANDS. Am. Forests 61(6): 14-16, 46, 48, illus. June 1955.

For better navigation, the Army Engineers proposed a dam and lock project that would flood great areas of bottomlands of the Tombigbee River, Ala. Local people and conservation organizations got together and presented a strong case, much of which is given in this article, for the great timber and wildlife values of the tract. Loss of the annual hardwood timber harvest alone would create much economic hardship. Wildlife resources now estimated at $128,000 would be reduced to $35,000. Facts were presented at a hearing and there is some hope the project can be altered to avoid extensive flooding.

GENERAL CONSERVATION, WATER, AND CLIMATE--Continued

Loomis, Charles P. (Mich. St. U.) WILDLIFE AND RECREATION, THE PAST AND THE FUTURE. Mich. Cons. 24(3): 2-7, illus. May-June 1955.
Human population rises rapidly, suburbs extend far into the country, park attendance skyrockets, sales of hunting and fishing licenses break all precedents. We have progressively less room for each person outdoors. "The demand for our wildlife and recreational resources is increasing so rapidly that it is doubtful that the best planning we can carry through will adequately provide the necessary resources. ...our need for recreation as manifested in increasing pressures on our wildlife resources, demonstrates that they will be deficient in the future. ...people who have been penned up in cities are demanding and feel the need for the use of our wildlife resources at an ever accelerated rate."

Strauss, Michael W. WHY NOT SURVIVE? Simon & Schuster, N. Y. xi + 272 p., illus. 1955. $4.00. [From review by R. M. Paul, Calif. Fish & Game 41(3).]
Strauss, a former head of the U. S. Bureau of Reclamation, has written a lively, optimistic book on American resources. "Mr. Strauss' discussion of recreation and wildlife is unfortunately rather condensed. His apparent conclusion is that the future of wildlife is very dim in the face of economic development and that the recreation now derived from fishing and hunting will be shifted to other types of recreational activity as these resources decline in abundance. It was of interest to note that Mr. Strauss' evaluations are expressed in dollars and cents, rather than the intangible values that are now probably the most important insofar as the recreational phases of fish and wildlife are concerned, but he recognizes that in the long run there may be small logic in the political decisions that will ultimately have to be made in those conflicts such as the one now taking place over the Echo Park Dam... Many technicians, particularly in the wildlife field, will no doubt argue with certain statements and many sportsmen will no doubt question the relegation of wildlife to the status of an interesting phenomenon which should be preserved in the manner of the buffalo, but on the whole this is a highly recommended book that should be widely read by all persons interested in the broad aspects of conservation."

Yale Conservation Club. YALE CONSERVATION STUDIES. Vol. 4. iii + 31 p. 1955. Published by Yale Cons. Club, 77 Prospect St., New Haven, Conn.
Nine brief but thoughtful essays, most of them by graduate students of the Yale Conservation Program. Some are concerned with principles, others review specific problems. The paper on the herring gull is a good, up-to-date summary of history, economics and control of this gull in the New England region. Papers in this volume are: Introduction, by Joseph Wood Krutch. The Community Forest, by Richard M. Brett. Environmental Assessment of Land-Use Patterns, by R. L. Bury. Resource Utilization in New Zealand, by Jane Collier. Wildlife for the Mid-West, by George W. Cox. New Strains on Old Water Laws, by Clyde O. Fisher, Jr. Conservation and Conflict of Interest, by H. Lincoln Foster. The Herring Gull: An Example of Avian Adaptability to Man-Made Environments, by Mary Anne Heimerdinger. Conservation of Philippine Forest Resources, by Tiburcio S. Serevo. The Sea Lamprey and the Death of the Great Lakes Trout Fishery, by Edmund K. Swigart.

SOILS

Anderson, W. W., and others. SOIL SURVEY OF PIERCE COUNTY, WASHINGTON. US Soil Cons. Serv., Ser. 1939, no. 27. 1-88 p., illus. + large folding maps. July 1955. $2.25 from Superintendent of Documents.

Glassey, T. W., and others. SOIL SURVEY (RECONNAISSANCE) OF CAMPBELL COUNTY, WYOMING. US Soil Cons. Serv., Ser. 1939, no. 22. 1-67 p., illus. + large folding maps. July 1955. $3.50 from Superintendent of Documents.

SOILS--Continued

Goodman, K. V., and others. SOIL SURVEY OF WALDO COUNTY, MAINE. US Soil Cons. Serv., Ser. 1940, no. 16. 1-125 p., illus. + large folding maps. June 1955. $3.75 from Superintendent of Documents.

Roberts, Wallace, and others. SOIL SURVEY OF KNOX COUNTY, TENNESSEE. US Soil Cons. Serv., Ser. 1942, no. 10. 1-241 p., illus. + large folding maps. Aug. 1955. $2.75 from Superintendent of Documents.

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